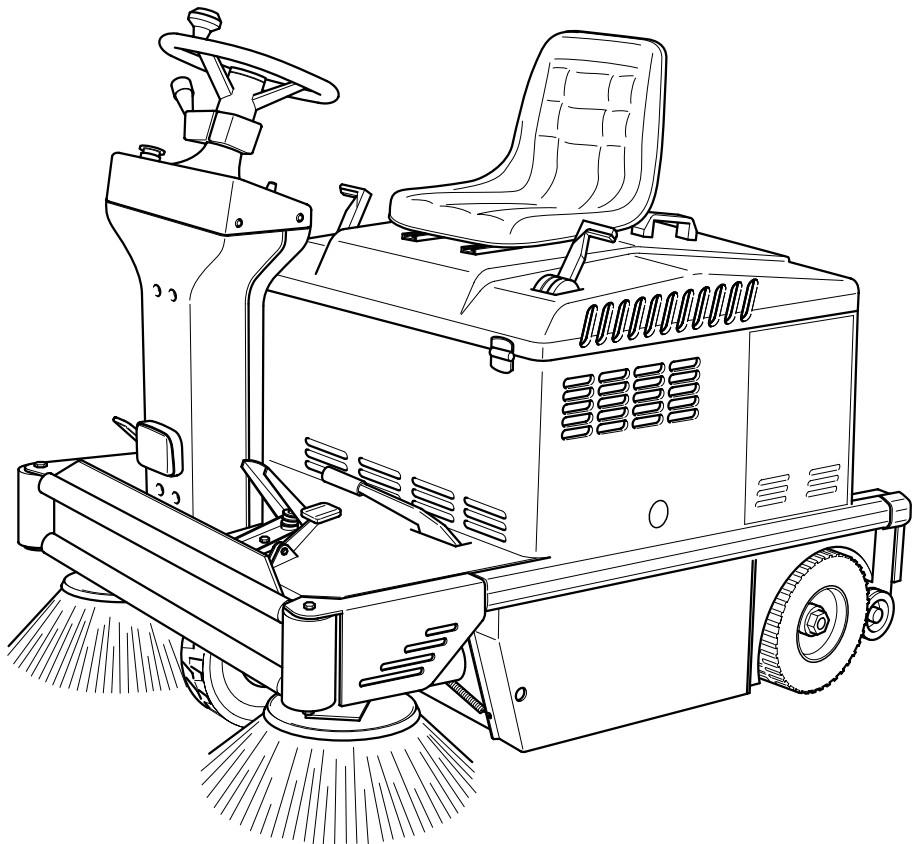


OPERATOR MANUAL

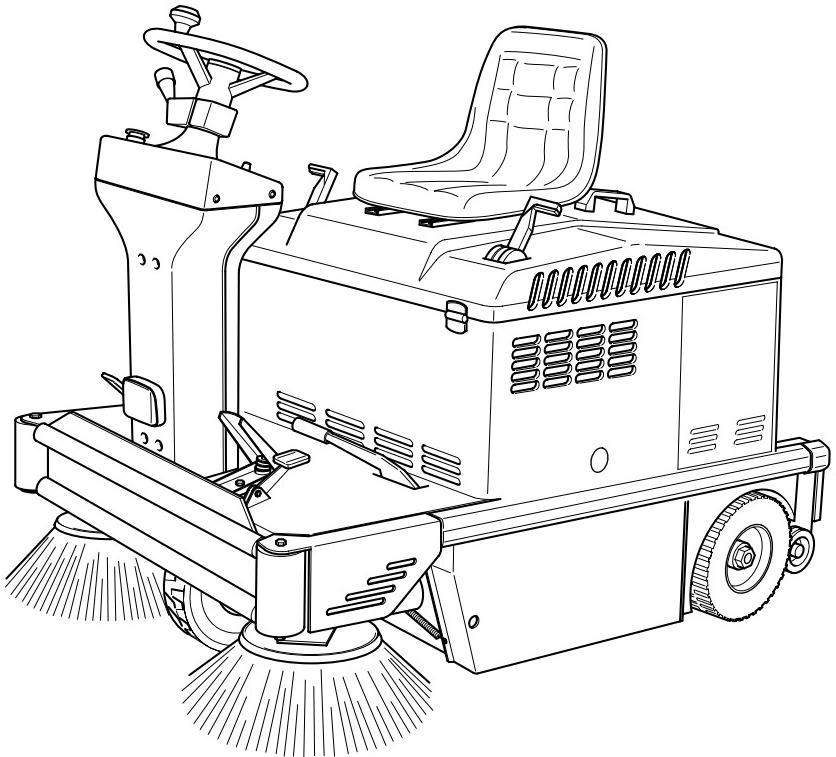
Advance SR 1100 B/ECO

Models 9082317010, 9083201010



**Nilfisk
Advance**

setting standards



INTRODUCTION / GENERAL INFORMATION	1
UNPACKING	2
TECHNICAL DATA	3
DESCRIPTION OF COMMANDS AND CONTROL PANEL	4
PRELIMINARY OPERATIONS (battery operated version)	5-7
PRELIMINARY OPERATIONS (version with eco version)	8-11
USE (battery operated version)	12-16
USE OF THE WORKING PROGRAMS	12
USE (version with eco version)	17-22
USE OF THE WORKING PROGRAMS	18
FURTHER PERFORMANCES OF THE MACHINE	
WITH eco version	22
SIDE BRUSHES ADJUSTMENT AND REPLACEMENT	23
MAIN BRUSH REPLACEMENT	24-25
FILTER CLEANING AND REPLACEMENT	26-27
MAINTENANCE	28
BATTERIES: CONTROL AND RECHARGE	28
BRAKES ADJUSTMENT	29
FRONT LAMP REPLACEMENT	29
MAINTENANCE OF THE eco version	30-31
SUMMARY OF MAINTENANCE CONTROLS (battery version)	32
SUMMARY OF MAINTENANCE CONTROLS (petrol version)	33
OPTIONAL ITEMS	34
SAFETY FUNCTIONS AND TROUBLE-SHOOTING	35

INTRODUCTION

This manual will help you get the most from your Sweeper Advance.

Any "left" or "right" indications are always defined with reference to the machine forward movement direction. He has the skilled personnel, the original parts and the tools needed to meet your requirements. The machine should not be used without protection devices. For your safety, make sure that all the safety guards are closed or mounted correctly before starting up the machine.

PARTS AND SERVICE

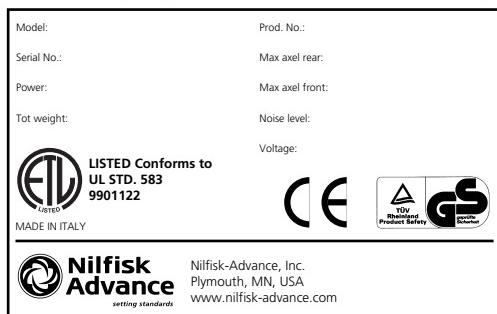
Repairs, when required should be performed by your Authorized Advance Service Center, who employs factory trained service personnel, and maintains an inventory of Advance original replacement parts and accessories.

Call the Advance Dealer named below for repair parts or service.

Please specify the Model and the Serial Number when discussing your machine.

NAME PLATE

The Model Number and the Serial Number of your machine are shown on the Nameplate on the machine. This information is needed when ordering repair parts for the machine. Use the space below to note the Model and Serial Number of your machine for future reference.

**GENERAL SAFETY RULES**

Carefully follow the rules described below to avoid injury to the operator and damage to the machine.

Carefully read the labels on the machine, do not cover them for any reason and replace them immediately if they become worn or damaged.

Do not place containers with liquids on the machine.

The machine storage temperature should range between -25°C and +55°C.

Humidity should range between 30 and 95%.

Do not use the machine in an explosive atmosphere.

Do not use the machine as a transport vehicle.

Do not allow the brushes to operate while the machine is stationary to avoid damaging to the floor.

In case of fire, use a powder extinguisher. Do not use water.

Do not bump into shelves or scaffolding where there is a risk of falling objects.

Adjust the operating speed to the floor adhesion.

Do not exceed the declared slope limits to avoid unstable conditions.

When the machine is parked, remove the key and engage the parking brake.

When machine operating malfunctions occur, make sure that they are not caused by a lack of routine maintenance. If not, request assistance from the service centre.

If parts must be replaced, request ORIGINAL spare parts from a dealer and/or Authorised Retailer.

For all maintenance operations, disconnect the electric power supply to the machine.

Do not remove the guards which require the use of tools to be disassembled.

Do not wash the machine with direct or pressurised water streams, or with corrosive substances.

The machine should be inspected by a service centre every 200 hours of operation.

The machine must never be left unattended, during the scrapping phase, because of the presence of toxic-harmful materials (batteries, oils, etc.) which are subject to standards that require disposal in special centres.

The machine will not generate damaging vibrations.

MODIFICATION AND IMPROVEMENTS

Our company constantly improves its products and reserves the right to make changes and improvements at its discretion without being obliged to apply such benefits to the machines that were previously sold.

SAFETY

How to prevent accidents.

No accident prevention programme is effective without the complete co-operation of the person directly responsible for operating the machine.

Most of the accidents that may occur in a company, on the job or during transfers are caused by the non-observance of the fundamental safety rules.

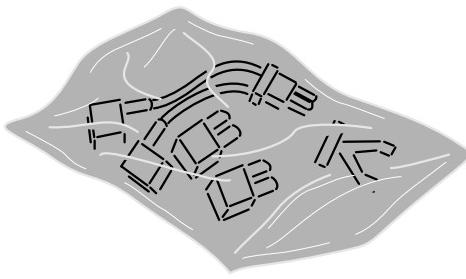
A careful and cautious user is the best guarantee against accidents and is more effective than any type of prevention programme.

SAVE THESE INSTRUCTIONS!

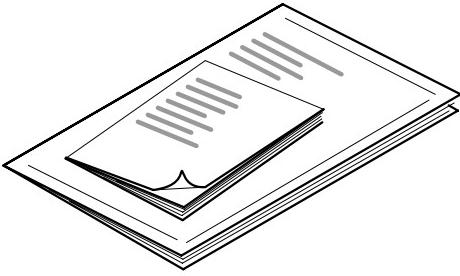
When the machine is delivered, carefully inspect the shipping carton and the machine for damage. If damage is evident, save the shipping carton so that it can be inspected. Contact the Advance Customer Service Department immediately to file a freight damage claim.

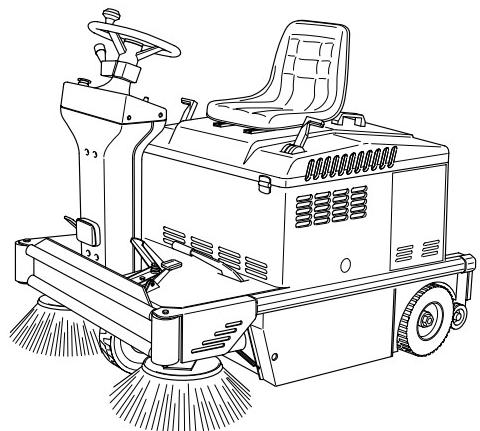
Please check that the following items be supplied with the machine:

1- envelope with cables for batteries and connector for battery-charger.



2- technical documents (Spare Parts Catalogue, Manual for Use and Maintenance and - for the petrol version only - Use and Maintenance Manual of the engine).





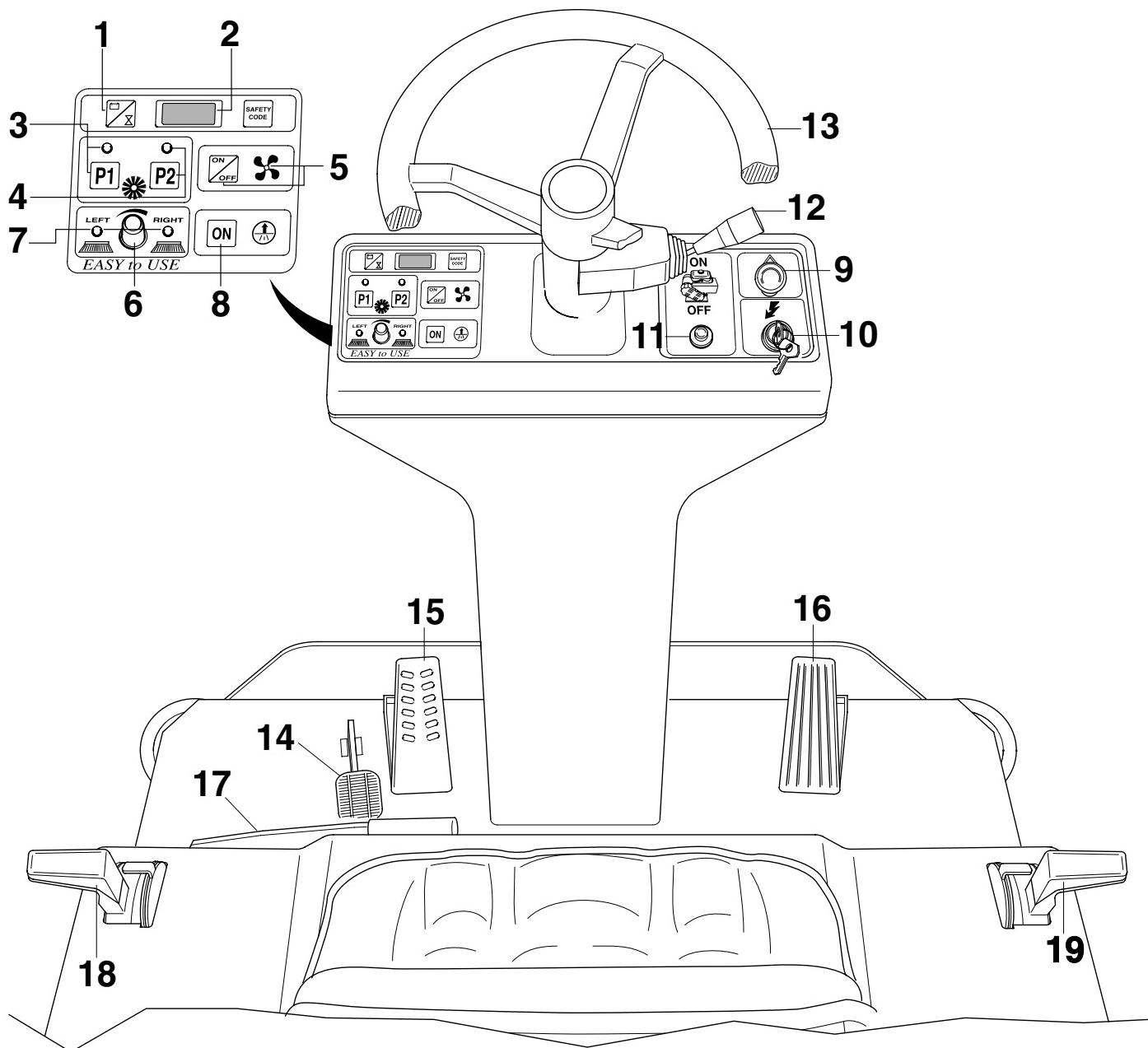
VERSION	SR 1100B	SR 1100 ECO
Voltage	24V	24V
Engine model	/	Vanguard OHV
Nominal Power at 3600 RPM	/	4 Hp - 2,97 Kw
Displacement	/	126 cc (7,69 cu.in)
Start	/	Automatic
Drive electrical motor	450W - 120 RPM	400W - 130 RPM
Main brush electrical motor	500W - 1600 RPM	500W - 1600 RPM
Suction electrical motor	30W - 3300 RPM	200W - 3300 RPM
Side brush electrical motor	90W - 120 RPM	60W - 120 RPM
Forward speed	max 7 km/h (4,8 mi/h)	6,2 km/h (4,2 mi/h)
Reverse speed	max 3,5 km/h (2,4 mi/h)	3,6 km/h (2,4 mi/h)
Max slope	20%	20%
Main brush	Ø 300 mm x 700 mm (11,8 x 27 in)	Ø 300 x 700 mm (11,8 x 27 in)
Side brush	Ø 430 mm (17 in)	Ø 430 mm (17 in)
Cleaning width with 1 side brush	900 mm (35 in)	900 mm (35 in)
Cleaning width with 2 side brushes	1100 mm (43 in)	1100 mm (43 in)
Front wheel (NR 1)	Ø 250 mm (9,8 in)	Ø 250 mm (9,8 in)
Rear drive wheels (NR 2)	Ø 250 mm (9,8 in)	Ø 250 mm (9,8 in)
Container capacity	70 lt (~ 6 gal)	70 lt (~ 6 gal)
Panel filter	5 micron - 4 m ² 5 micron - 43 sqf	5 micron - 4 m ² 5 micron - 43 sqf
Electrical filter shaker	30W - 3800 RPM	90W - 6000 RPM
Machine length	1376 mm (54 in)	1376 mm (54 in)
Width	910 mm (36 in)	910 mm (36 in)
Height	1193 mm (47 in)	1193 mm (47 in)
Fuel tank capacity	/	3 lt (3,2 qt)
Engine oil tank capacity	/	0,6 lt (0,64 qt)

Recommended battery: 2 x 6V 244 Ah @ 20

Note: Using the recommended batteries the working autonomy will be of about 3 hours.

DESCRIPTION OF COMMANDS AND CONTROL PANEL

56041475



- 1- Voltmeter/hourmeter push button
- 2- Display
- 3- Button for selection/indicator of working program P1
- 4- Button for selection/indicator of working program P2
- 5- ON/OFF button and indicator of suction motor
- 6- Knob for the speed adjustment of the side brushes
- 7- Indicator of the operation of left/right side brushes
- 8- ON button of filter-shaker motor
- 9- Emergency stop push button

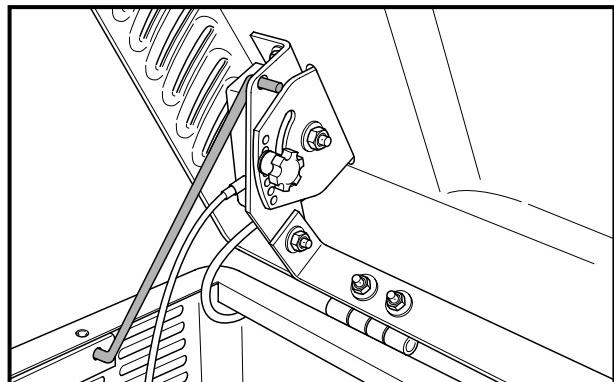
- 10- ON/OFF main key switch
- 11- Start/Stop push button for eco version
- 12- Selection of forw./reverse speed, light ON/OFF, horn
- 13- Steering wheel
- 14- Pedal for flap lifting
- 15- Brake pedal
- 16- Accelerator
- 17- Parking brake lever
- 18- Lever for left side brush command
- 19- Lever for right side brush command

The electric machine (operated only with batteries) requires four 6V batteries.

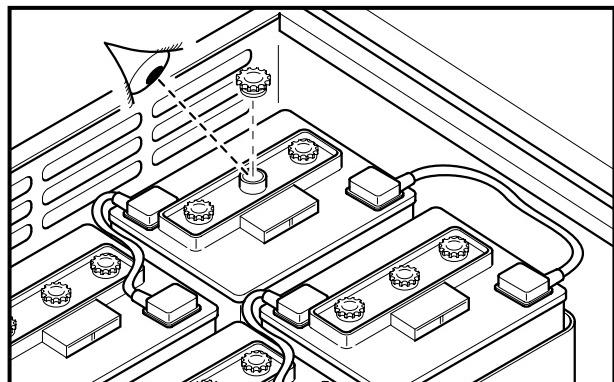
Depending on the country where the machine is sold three possibilities can occur:

- 1- the battery is supplied with the machine and it is set, complete with acid solution
- 2- the battery is supplied with the machine and it is set, but not complete with acid solution
- 3- the battery is not supplied.

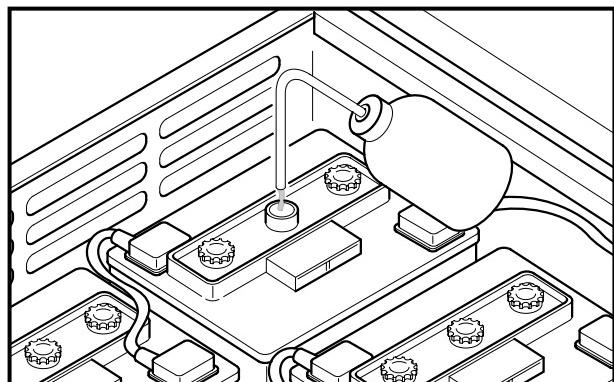
The battery compartment is under the seat: lift the compartment lid, toward the steering wheel, and verify which one of the three possibilities is applied to your machine.



If the batteries are installed open one of the caps of every battery and check if they are filled with electrolyte.

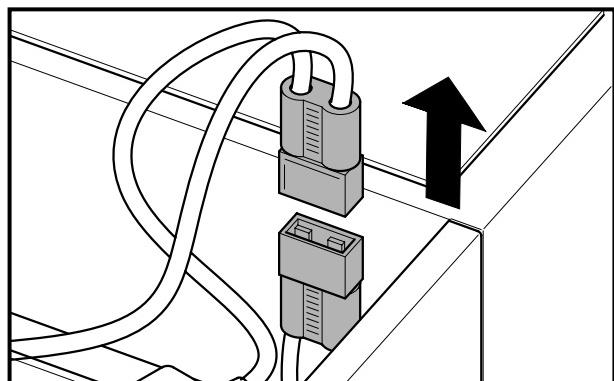


- 1- If the battery is filled:
 - 1a. Check the electrolyte level in every cell and -if necessary- fill up with distilled water.
 - 1b. Proceed with a battery recharge according to the MAINTENANCE paragraph and to the Battery User Manual.



WARNING: before starting the battery recharge the battery connector must be disconnected from the machine.

After the recharge plug the battery connector to the machine.



- 2- If the batteries are installed but not filled with acid solution they must be filled with a solution of sulphuric acid (density not lower than 1.270 Kg when at 25°C) according to the instructions specified below and in the Battery User Manual.

BATTERY FILLING UP WITH ACID SOLUTION

Warning: the battery acid is corrosive; if it comes in contact with the skin or eyes rinse thoroughly with water and consult a physician.

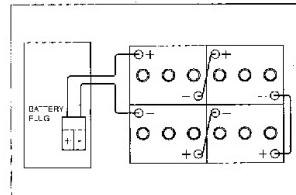
The batteries must be filled in a well ventilated area.

FRONT OF MACHINE

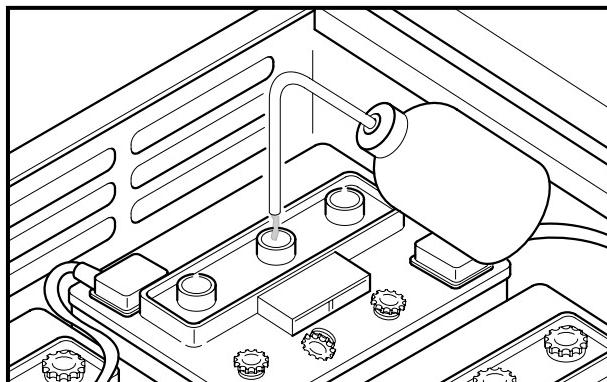
INSTALL BATTERIES ACCORDING TO DIAGRAM BELOW. OBSERVE CORRECT POLARITY AT ALL CONNECTIONS

WARNING
THIS IS A 24VDC SYSTEM. USE ONLY THE CHARGER PROVIDED WITH THE UNIT TO RECHARGE BATTERIES.

N°4 BATTERIES 12V



BACK OF MACHINE

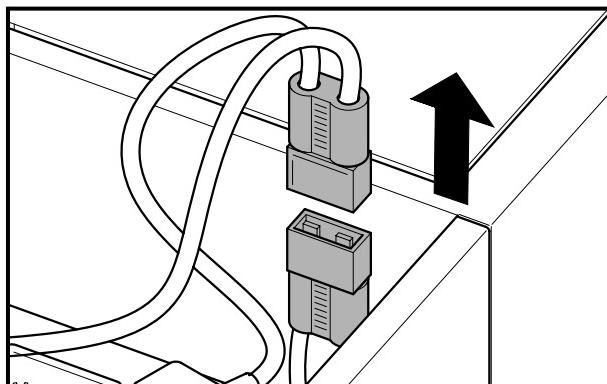


Fill every battery cell with acid; the right level is specified in the Battery User Manual.

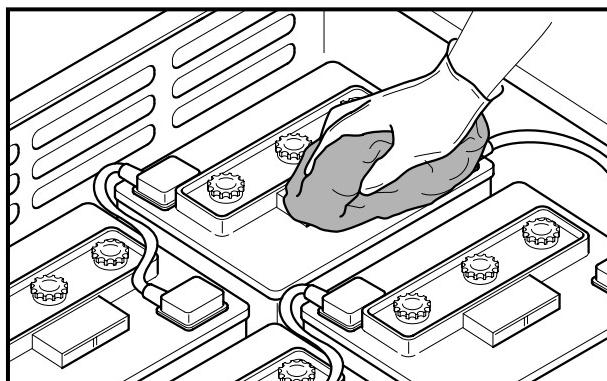
After one hour fill up with acid, if necessary.

Let batteries rest for a further hour; then proceed with a recharge according to the instructions specified in the Battery User Manual and in the MAINTENANCE paragraph. During the recharge the battery caps must be open.

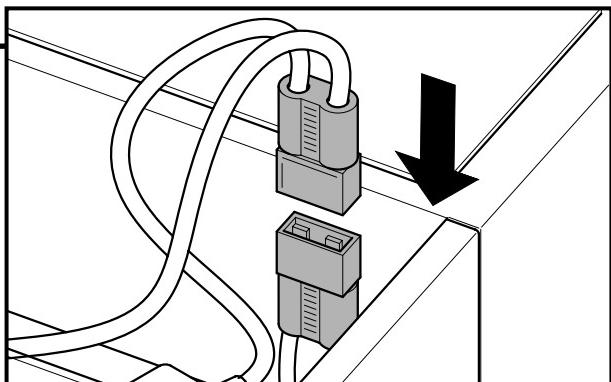
WARNING: before starting the recharge the battery connector must be disconnected from the machine.



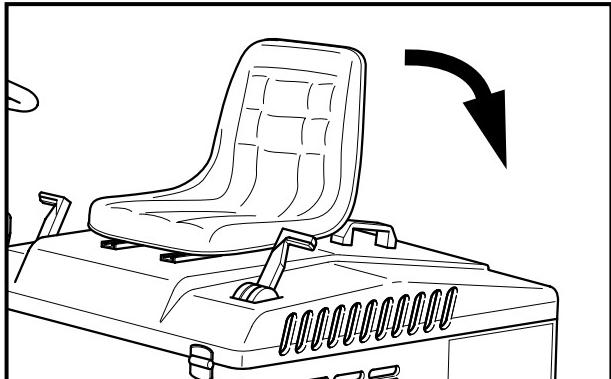
After the recharge close all the cell caps and clean the top of the battery from any acid remains.



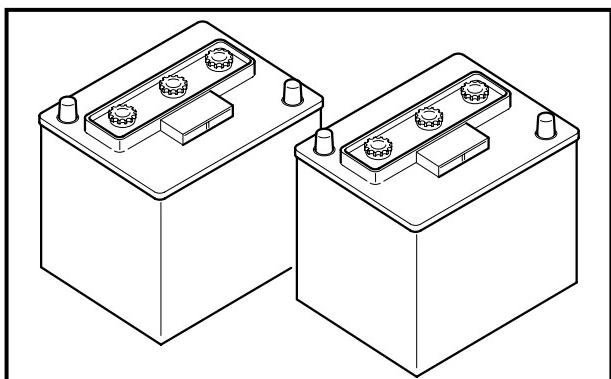
Connect the battery connector to the machine.



Close the lid of the battery compartment.

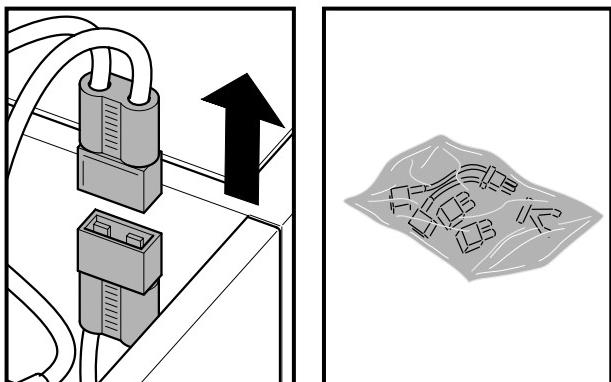


3- If the machine is not equipped with batteries they must be procured and mounted. It is recommended to get the assistance of qualified personnel to chose and set the batteries.



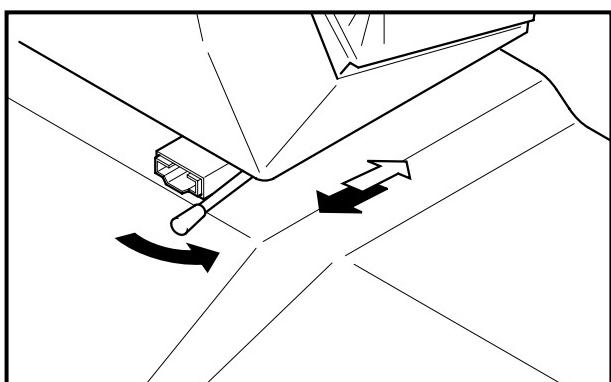
The electrical cables supplied with the machine can be used for the connection of the four batteries.

WARNING: before starting the recharge the battery connector must be disconnected from the machine.



After having set the batteries climb onto the machine and adjust the seat to find the most comfortable position.

Now the machine is ready to be used.

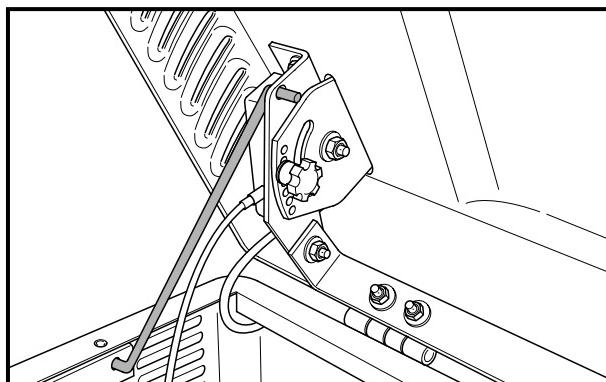


The machine operated with eco version requires two 12V batteries.

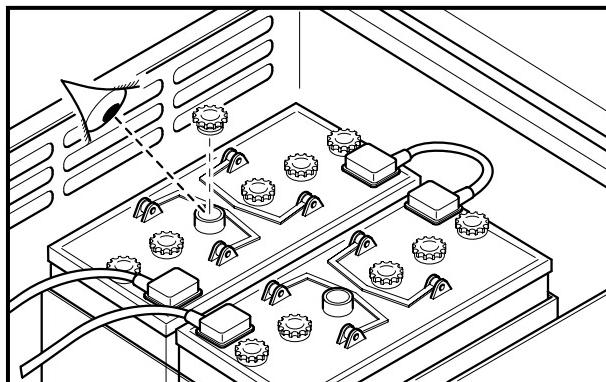
Depending on the country where the machine is sold three possibilities can occur:

- 1- the battery is supplied with the machine and it is set, complete with acid solution
- 2- the battery is supplied with the machine and it is set, but not complete with acid solution
- 3- the battery is not supplied.

The battery compartment is under the seat: lift the compartment lid, toward the steering wheel, and verify which one of the three possibilities is applied to your machine.

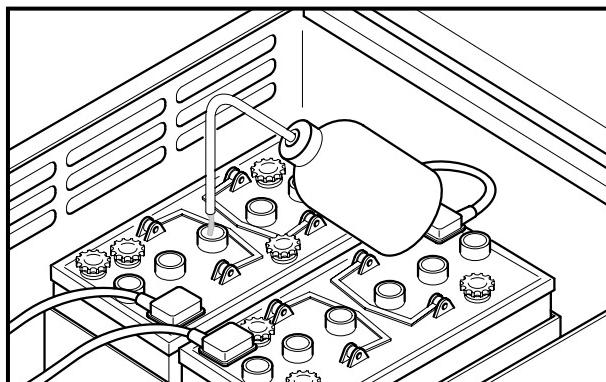


If the batteries are installed open one of the caps of every battery and check if they are filled with electrolyte.



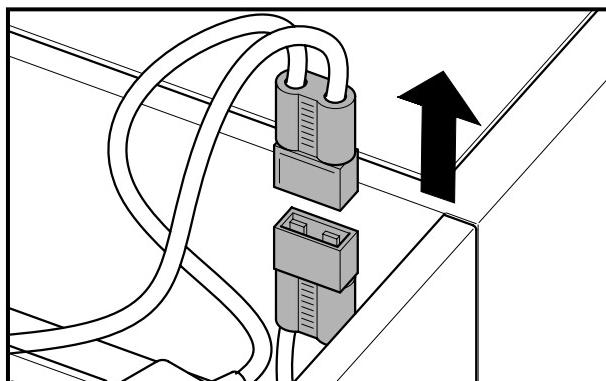
1- If the battery is filled:

- 1a. Check the electrolyte level in every cell and fill up -if necessary- with distilled water.
- 1b. Proceed with a battery recharge according to the MAINTENANCE paragraph and to the Battery User Manual.



WARNING: before starting the battery recharge the battery connector must be disconnected from the machine.

After the recharge plug the battery connector to the machine.



- 2- If the batteries are installed but not filled with acid solution they must be filled with a solution of sulphuric acid (density not lower than 1.270 Kg when at 25°C) according to the instructions specified below and in the Battery User Manual.

BATTERY FILLING UP WITH ACID SOLUTION

Warning: the battery acid is corrosive; if it comes in contact with the skin or eyes rinse thoroughly with water and consult a physician.

The batteries must be filled in a well ventilated area.

Fill every battery cell with acid; the right level is specified in the Battery User Manual.

After one hour fill up with acid, if necessary.

Let batteries rest for a further hour; then proceed with a recharge according to the instructions specified in the Battery User Manual and in the MAINTENANCE paragraph. During the recharge the battery caps must be open.

WARNING: before starting the recharge the battery connector must be disconnected from the machine.

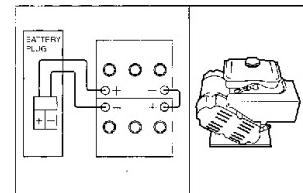
After the recharge close all the cell caps and clean the top of the battery from any acid remains.

FRONT OF MACHINE

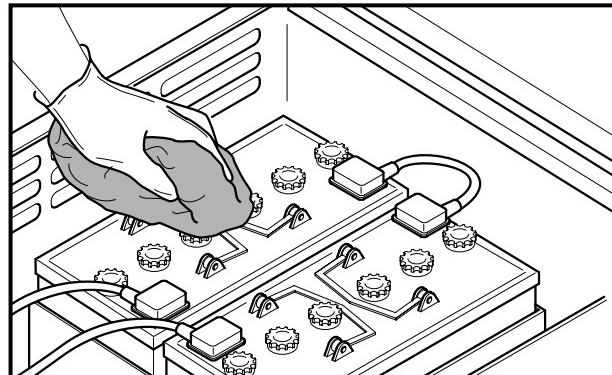
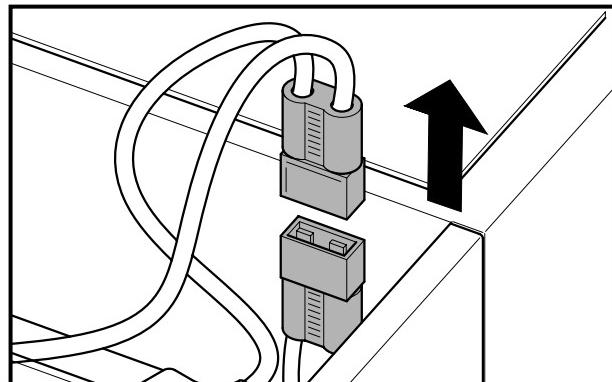
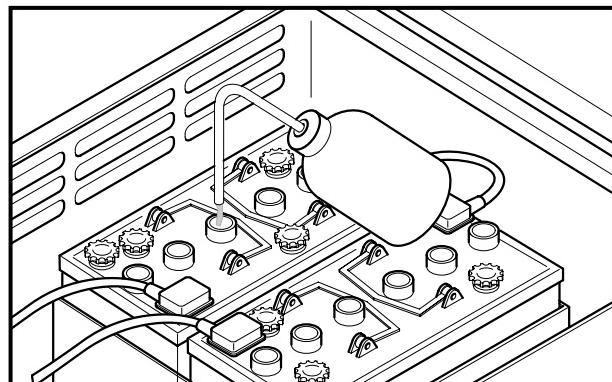
INSTALL BATTERIES ACCORDING TO DIAGRAM BELOW. OBSERVE CORRECT POLARITY AT ALL CONNECTIONS.

THIS IS A 24VDC SYSTEM. USE ONLY THE CHARGER PROVIDED WITH THE UNIT TO RECHARGE BATTERIES

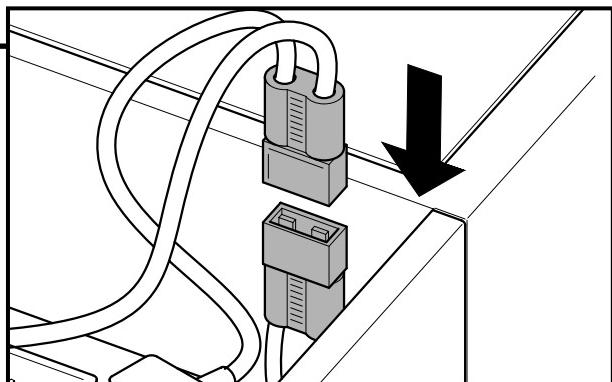
N°2 BATTERIES x 12V



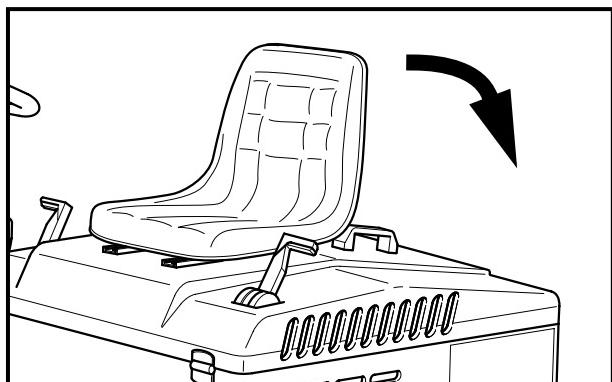
BACK OF MACHINE



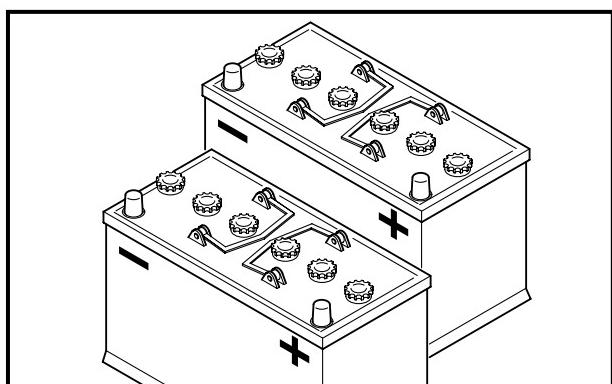
Connect the battery connector to the machine.



Close the lid of the battery compartment.

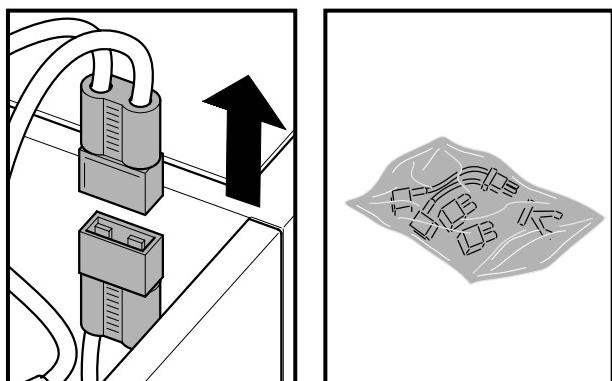


3- If the machine is not equipped with batteries they must be procured and mounted. It is recommended to get the assistance of qualified personnel to chose and set the batteries.

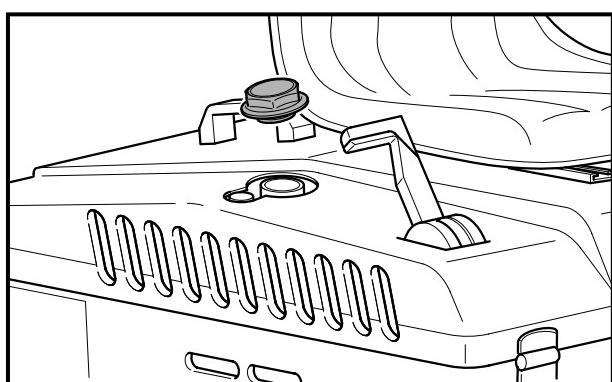


The electrical cables supplied with the machine can be used for the connection of the four batteries.

WARNING: before starting the recharge the battery connector must be disconnected from the machine.

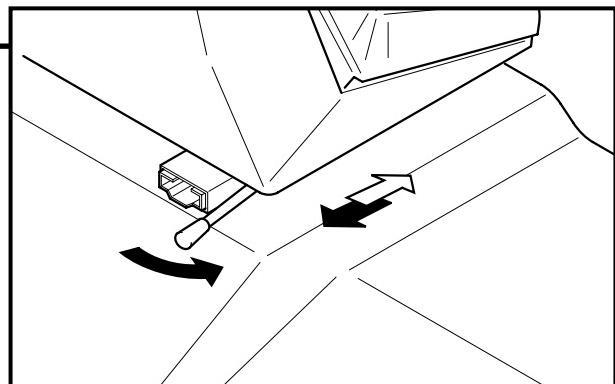


Fill the fuel tank with unleaded petrol.

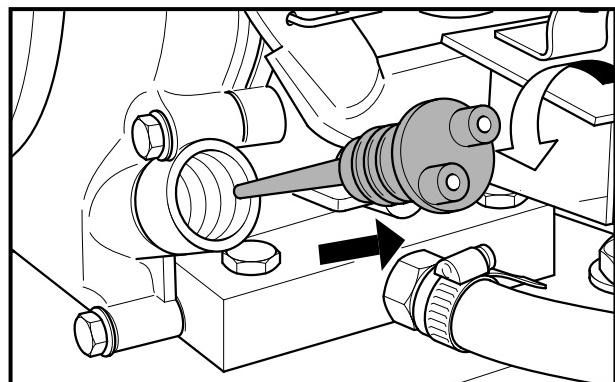


Climb onto the machine and adjust the seat to find the most comfortable position.

Now the machine is ready to be used.



For oil control please check at page 30.



Insert the ignition key into the panel and turn it clockwise: the display will show all zeros and after about three seconds the battery voltage will appear.

Note: the temporary lighting of the side brush indicators and the short sound from the reverse speed acoustic indicator correspond to a normal behaviour.

Wait not less than three seconds before restarting the machine after switch Off.

Check the charge status of the batteries on the display.

Note: the display has two functions: voltmeter and hour meter. The voltmeter will activate the block function during an undervoltage; it will disable all the machine activities - except for the drive - when the battery voltage drops below 20 Volt (the display flashes): recharge the battery as specified in the Maintenance paragraph.

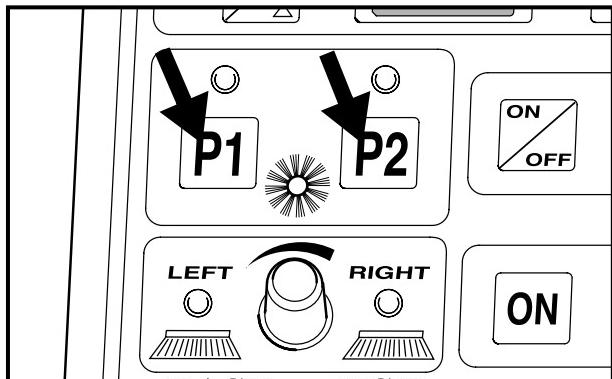
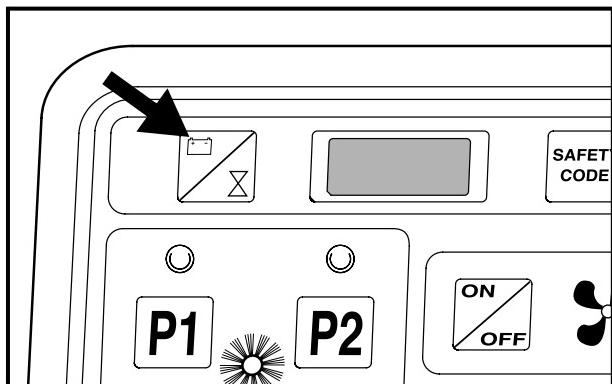
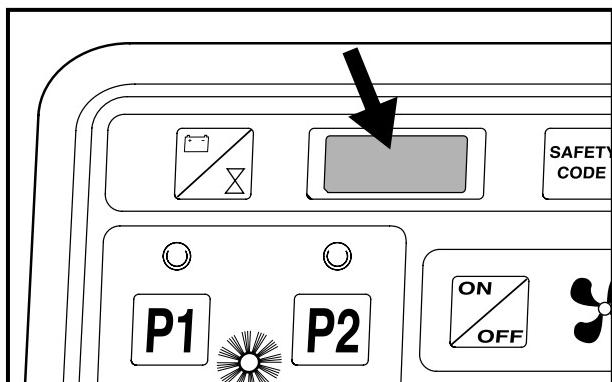
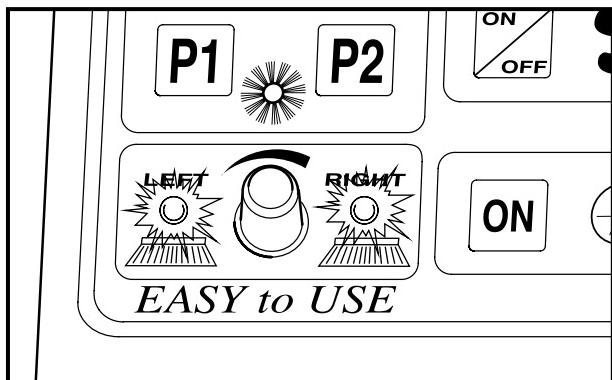
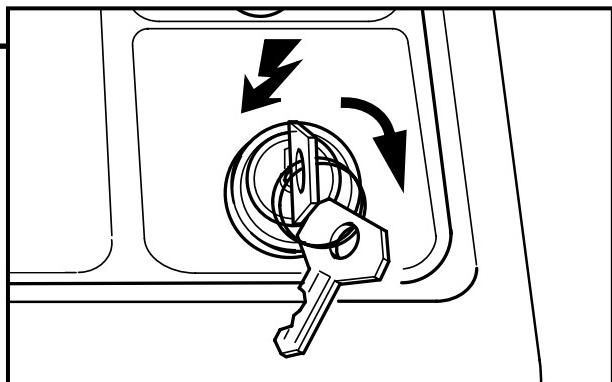
To access the hour meter function press the button shown in the figure: the display will show the number of machine service hours. Press the button again to display the number of machine service minutes. Pressing the button again or waiting ten seconds the value on the display will return to the battery voltage level.

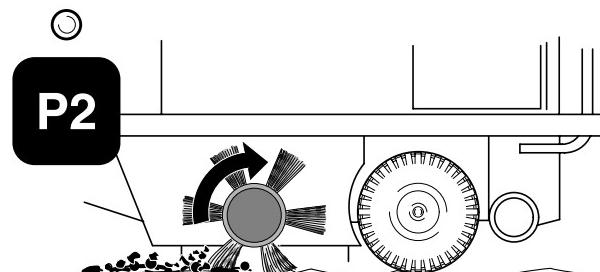
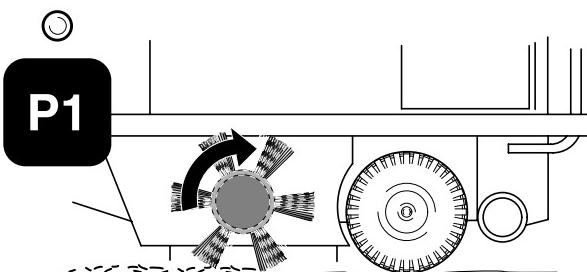
USE OF THE WORKING PROGRAMS

It is possible to choose one of the two working programs **P1** and **P2**, pressing the relevant button:

P1 is the "light cleaning program" (for internal environment, i.e. smooth floor, moquette, small debris etc.)

P2 is the "hard cleaning program" (for external environment, i.e. asphalt, uneven floor, big debris etc.).





After having pressed the preferred button the relevant light indicator will turn on, together with the suction motor indicator.

The temporary activation of the main brush and suction electrical motors will also occur; (the relevant light indicators will flash).

Note: the working parameters of programs **P1** and **P2** are pre-set by the manufacturer of the machine: if you want to change the pre-set values call the customer service personnel of your supplier.

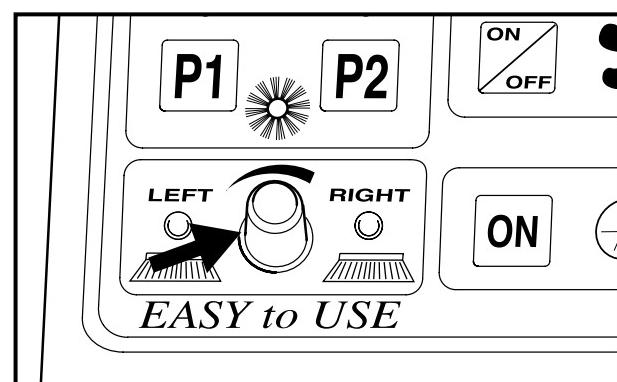
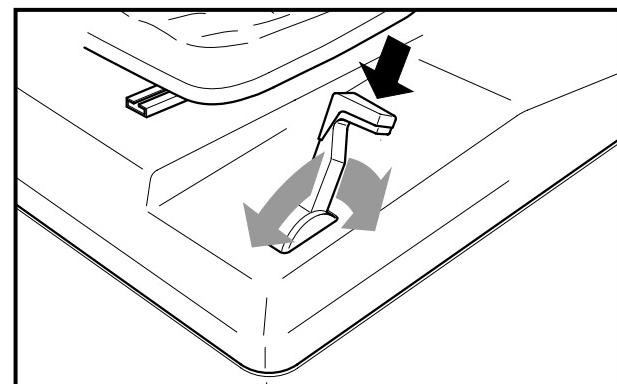
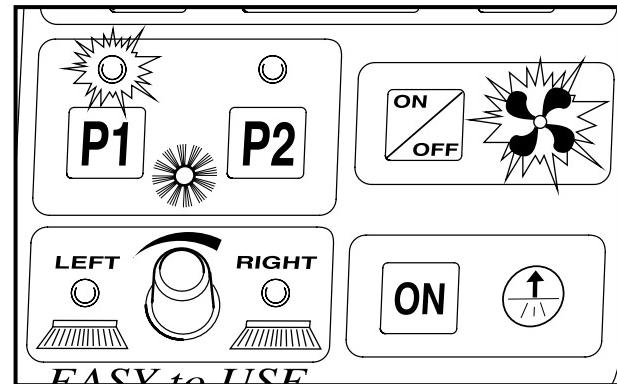
Lower the side brush/es pressing the top of the relevant lever and moving it forward,

Note: on the control panel the corresponding light indicators will turn on.

To lift the side brush/es press the top of the levers and move them backward.

Note: the side brush/es, the main brush and the suction fan will start automatically when the accelerator pedal will be pressed (AUTO POWER-ON).

It is possible to adjust the side brush/es turning speed by means of the dedicated knob.



Select the forward speed by means of the command lever.
Press the accelerator pedal to start the job.

Note: by releasing the accelerator pedal (or setting the command lever to the neutral position) the automatic switch off of all functions will occur within 8 seconds (Auto Power Off); the light indicators of the selected working program and of the suction fan will start flashing. The automatic restart of all functions will automatically occur as soon as the accelerator pedal will be pushed again (Auto Power ON).
In order to enable the selection of a different working program first disable the previously selected one.

When it is necessary to sweep on a wet floor stop the suction fan pressing the relevant button, in order to prevent the damage of the paper panel filter with water.

In order to get an efficient cleaning function the panel filter must always be clean.

Press the filter-shaker button, even if the machine is working.

This operation must be repeated every 10 to 15 minutes, depending on the kind of rubbish to be swept; before emptying the dirt container and, in any case, at the end of the work.

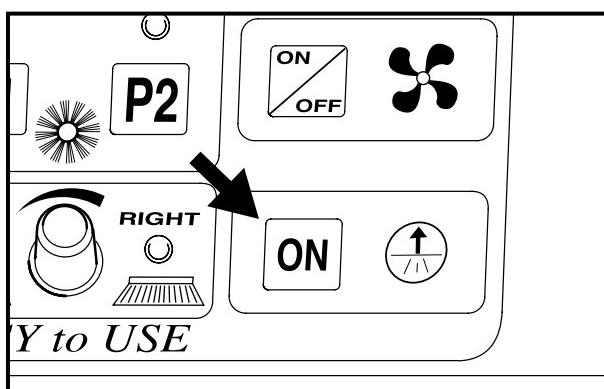
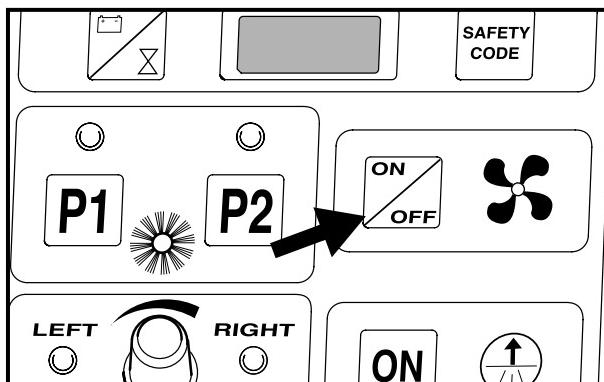
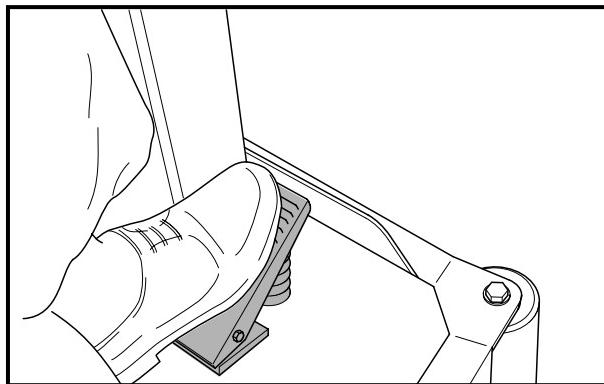
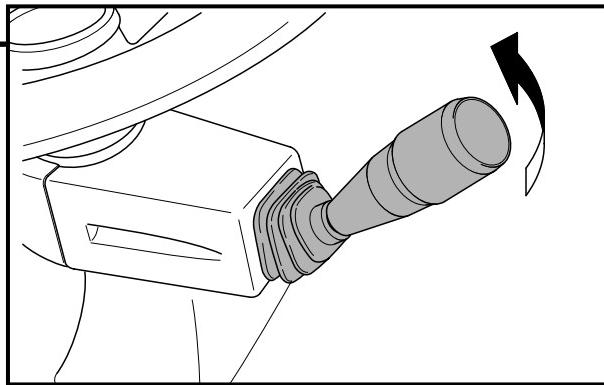
During the operation of the filter-shaker the suction fan will continue to run (no automatic stop will occur).

If you want to stop the suction fan during the filter shaker operation - two possibilities exist:
1st- to stop the fan by pressing the dedicated ON/OFF button.

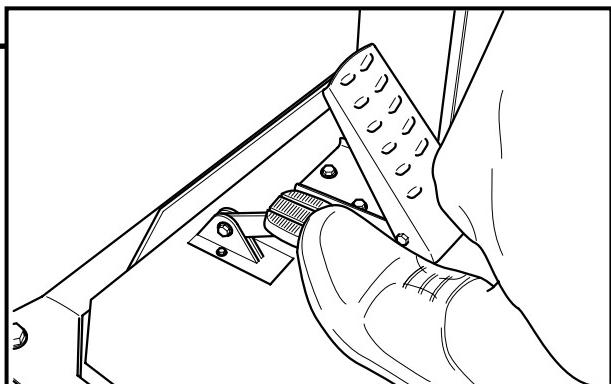
2nd- to wait for the functions automatic power off (after the release of the accelerator pedal)

To restart the suction fan either press the ON/OFF button or use the accelerator pedal.

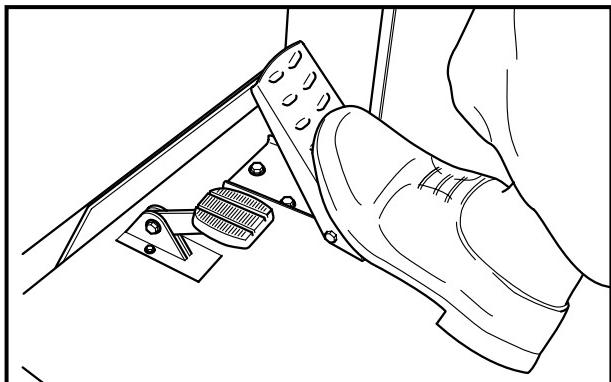
As an alternative - in order to make easier the operator's job - the automatic filter sheaking will occur, every five minutes.



To collect light and bulky waste materials lift the front flap using the left pedal (do not press the pedal down for a long time, not to reduce the suction capability of the machine).

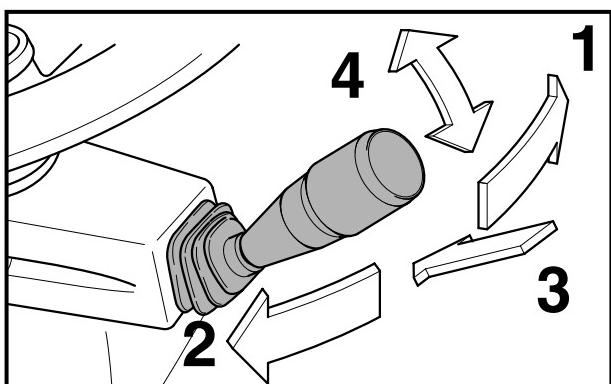


The machine gets an automatic breaking function when the accelerator pedal is released; when necessary the service brake can also be used (see the figure).



When driving reverse an intermittent acoustic signal will be heard and all the functions will remain enabled.

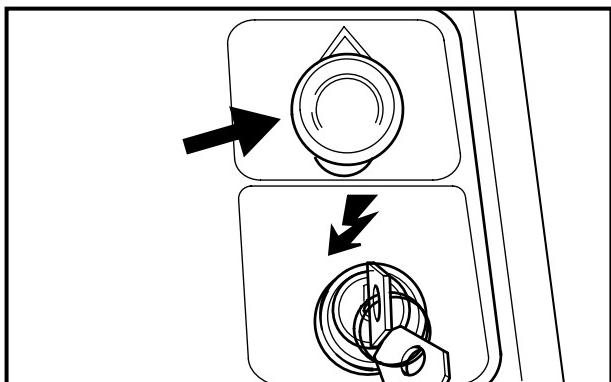
In the figure the functions of the command lever are shown:
1- forward speed
2- reverse speed
3- horn
4- front light On/Off.



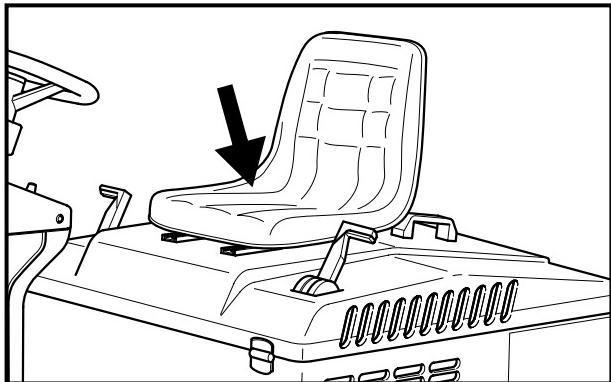
The machine is equipped with an emergency stop button; by pressing this button (red light On) a sudden stop of the machine will occur and all functions will turn Off.

To restart the machine turn the red button clockwise (according to the arrow shown on the button itself).

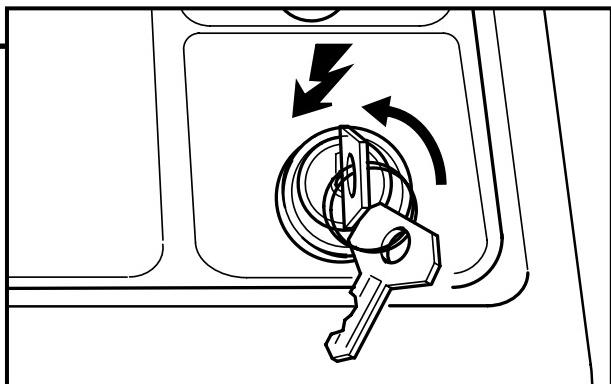
To restart the normal operation re-select one of the two working programs **P1** or **P2**.



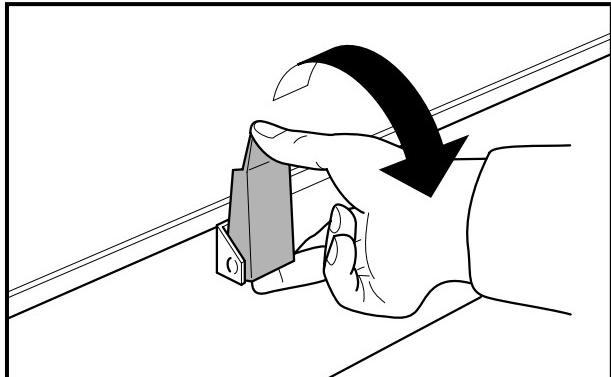
A safety device is located inside the operator seat: the drive function - either forward or reverse - is disabled as soon as the operator will stand up or leave the seat.



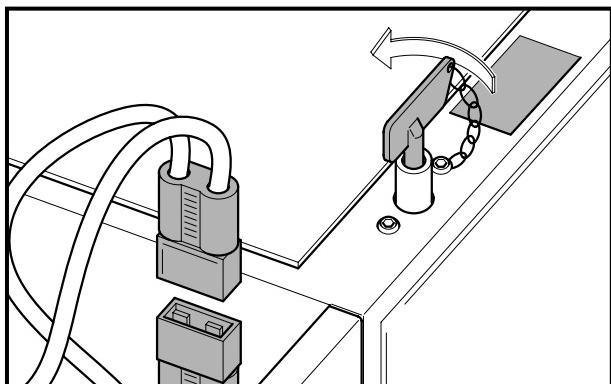
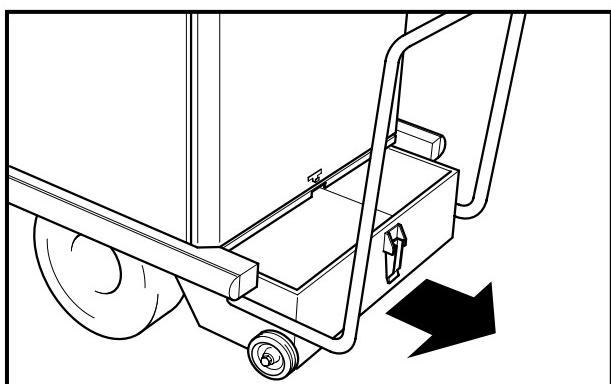
At the end of the job turn off the selected working program (P1 or P2). Before leaving the machine make sure that the side brush/es be lifted, the parking brake engaged and the master key in the Off position (counter-clockwise).



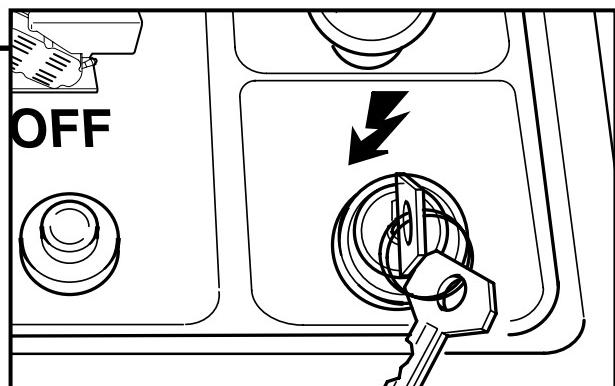
At the end of the job or whenever it is necessary empty the rear dirt container.



In the event that the machine must be pushed in Off condition or without batteries turn the proper red key counter-clockwise (see the figure), in order to disengage the electrical drive motor and disable the self-breaking function. Turn and eventually remove the red key that can be seen after lifting the lid of the battery compartment.

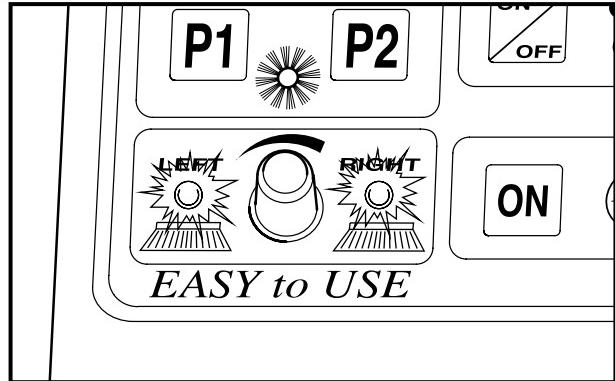


Insert the ignition key into the panel and turn it clockwise: the display will show all zeros and after about three seconds the battery voltage will appear.



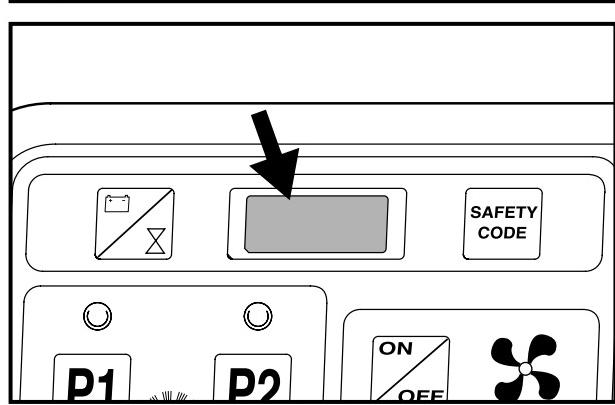
Note: the temporary lighting of the side brush indicators and the short sound from the reverse speed acoustic indicator correspond to a normal behaviour.

Wait not less than three seconds before restarting the machine after switch Off.

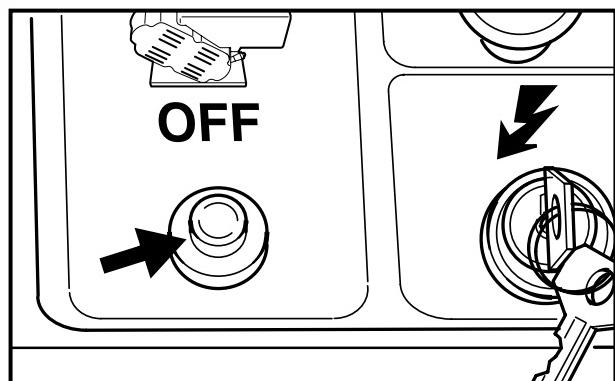


Check the charge status of the batteries on the display.

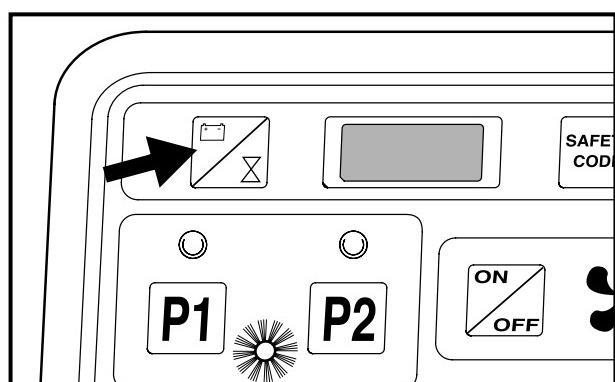
Note: the display has two functions: voltmeter and hour meter. The voltmeter will activate the block function during an undervoltage; it will disable all the machine activities - except for the drive - when the battery voltage drops below 20 Volt (the display is flashing); when this condition is achieved you have two options: either recharge the battery according the Maintenance paragraph, or start the eco version.



To start the eco version press the red button shown in the figure; to stop the engine press the same button again.

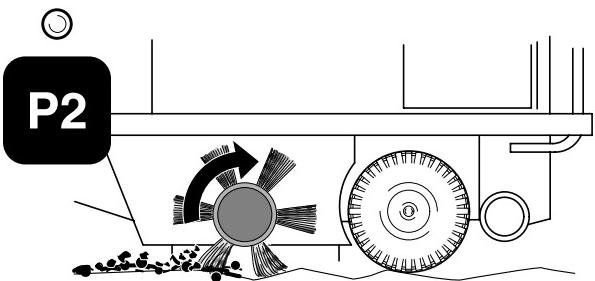
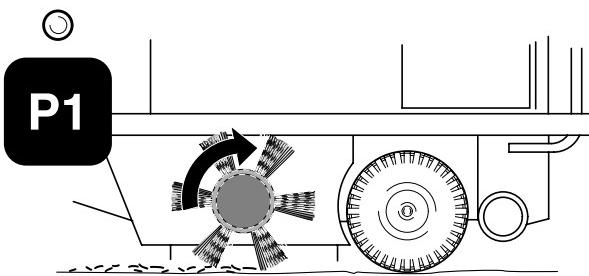
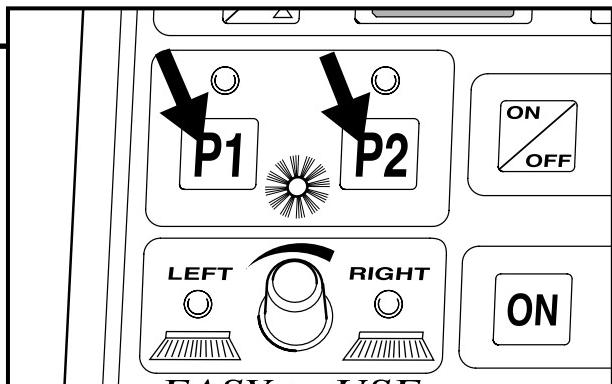


To access the hour meter function press the button shown in the figure: the display will show the number of machine service hours. Press the button again to display the number of machine service minutes. Pressing the button again or waiting ten seconds the value on the display will return to the battery voltage level.



USE OF THE WORKING PROGRAMS

After the start of the eco version it is possible to choose one of the two working programs **P1** and **P2** pressing the relevant button:
P1 is the "light cleaning program" (for internal environment, i.e. smooth floor, moquette, small debris etc.)
P2 is the "hard cleaning program" (for external environment, i.e. asphalt, uneven floor, big debris etc.).



After having pressed the preferred button the relevant light indicator will turn on, together with the suction motor indicator.
The temporary activation of the main brush and suction electrical motors will also occur; (the relevant light indicators will flash).

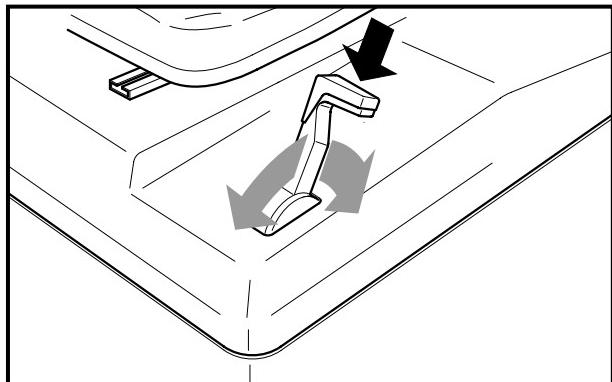
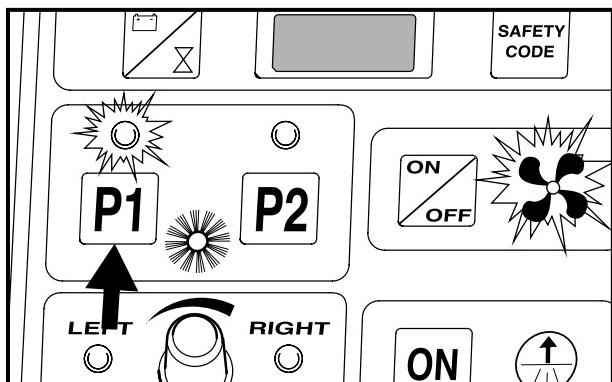
Note: the working parameters of programs **P1** and **P2** are pre-set by the manufacturer of the machine: if you want to change the pre-set values call the customer service personnel of your supplier.

Lower the side brush/es pressing the top of the relevant lever and moving it forward,

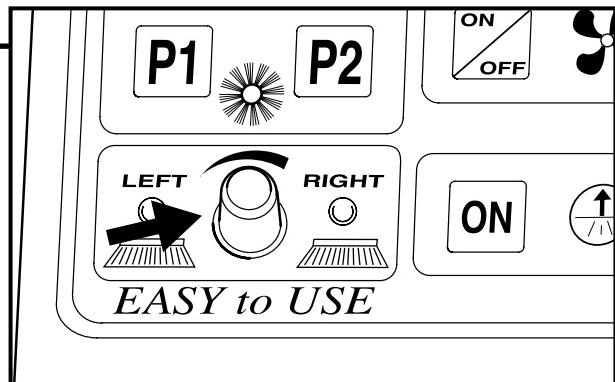
Note: on the control panel the corresponding light indicators will turn on.

To lift the side brush/es press the top of the levers and move them backward.

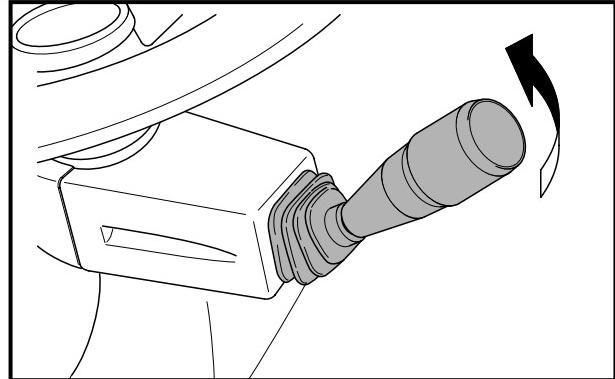
Note: the side brush/es, the main brush and the suction fan will start automatically when the accelerator pedal will be pressed (AUTO POWER-ON).



It is possible to adjust the side brush/es turning speed by means of the dedicated knob.

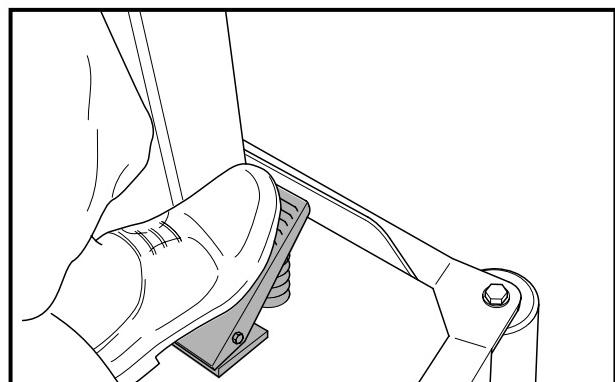


Select the forward speed by means of the command lever.

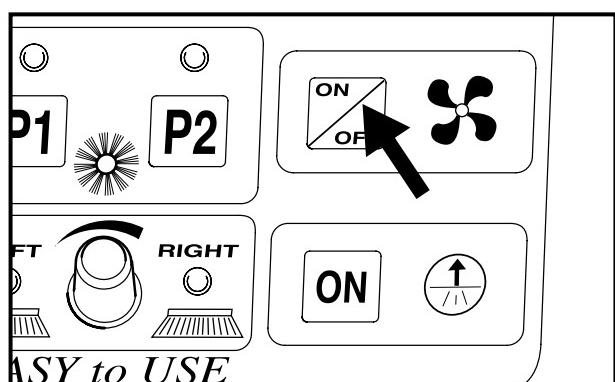


Press the accelerator pedal to start the job.

Note: by releasing the accelerator pedal (or setting the command lever to the neutral position) the automatic switch off of all functions will occur within 8 seconds (Auto Power Off) except the eco version; the light indicators of the selected working program and of the suction fan will start flashing. The automatic restart of all functions will automatically occur as soon as the accelerator pedal will be pushed again (Auto Power ON). In order to enable the selection of a different working program first disable the previously selected one.



When it is necessary to sweep on a wet floor stop the suction fan pressing the relevant button, in order to prevent the damage of the paper panel filter with water.

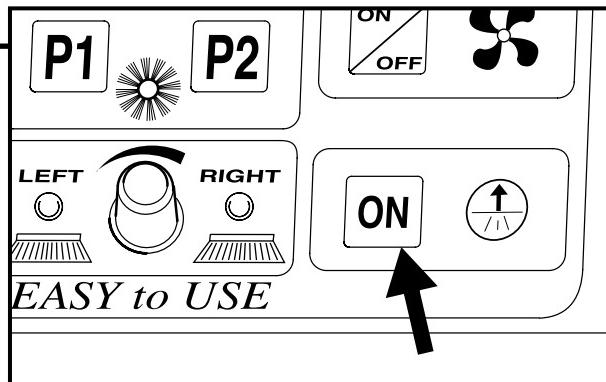


In order to get an efficient cleaning function the panel filter must always be clean.

Press the filter-shaker button, even if the machine is working.

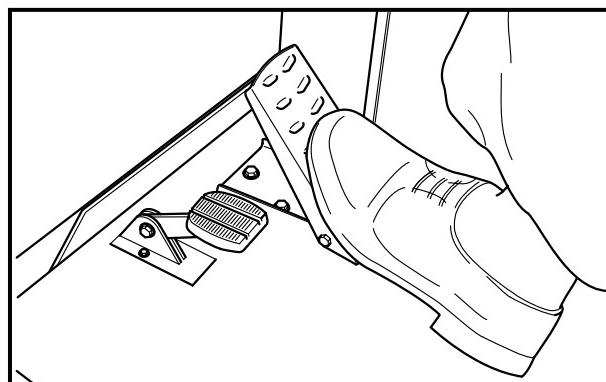
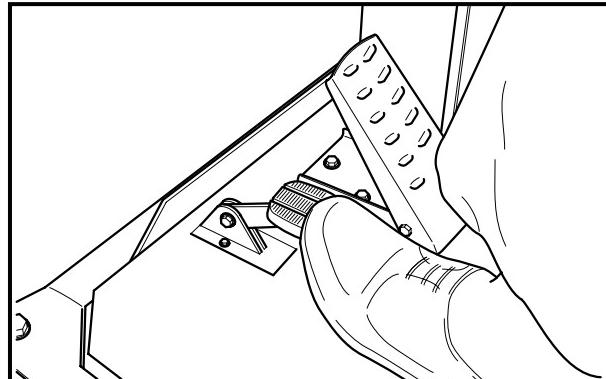
This operation must be repeated every 10 to 15 minutes, depending on the kind of rubbish to be swept; before emptying the dirt container and, in any case, at the end of the work.

To collect light and bulky waste materials lift the front flap using the left pedal (do not press the pedal down for a long time, not to reduce the suction capability of the machine).



The machine gets an automatic breaking function when the accelerator pedal is released; when necessary the service brake can also be used (see the figure).

When driving reverse an intermittent acoustic signal will be heard and all the functions will remain enabled.

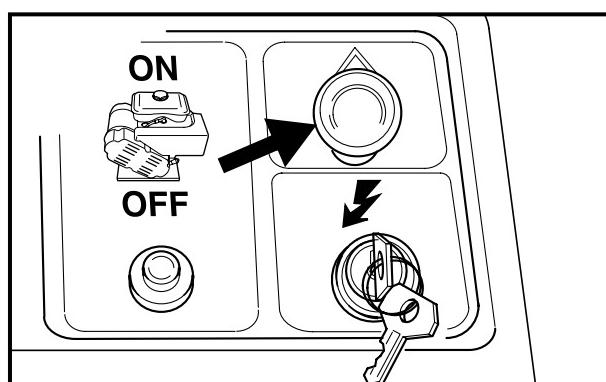
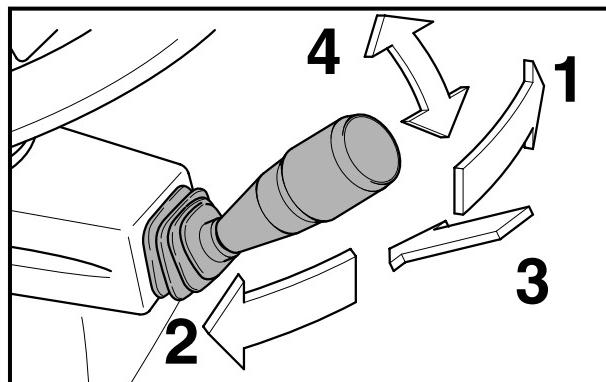


In the figure the functions of the command lever are shown:
 1- forward speed
 2- reverse speed
 3- horn
 4- front light On/Off.

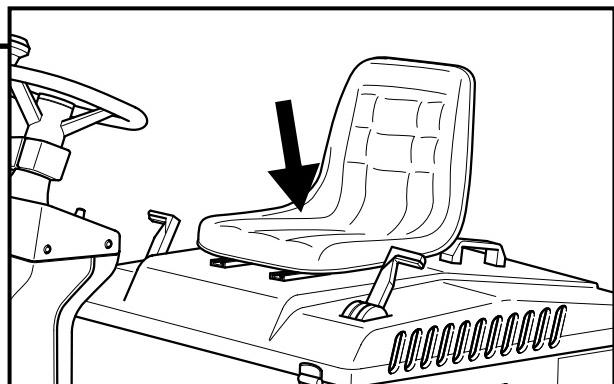
The machine is equipped with an emergency stop button; by pressing this button (red light On) a sudden stop of the machine will occur and all functions will turn Off, the eco version too.

To restart the machine turn the red button clockwise (according to the arrow shown on the button itself).

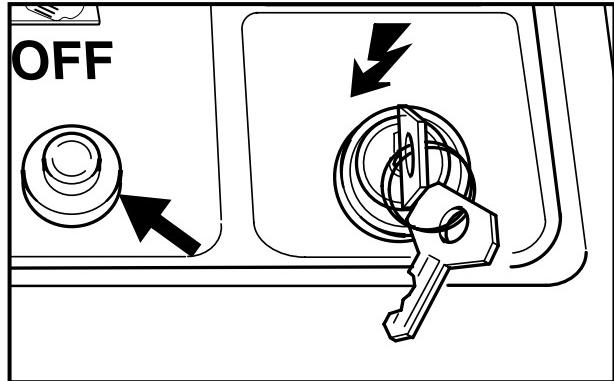
To restart the normal operation re-select one of the two working programs P1 or P2 and restart the eco version.



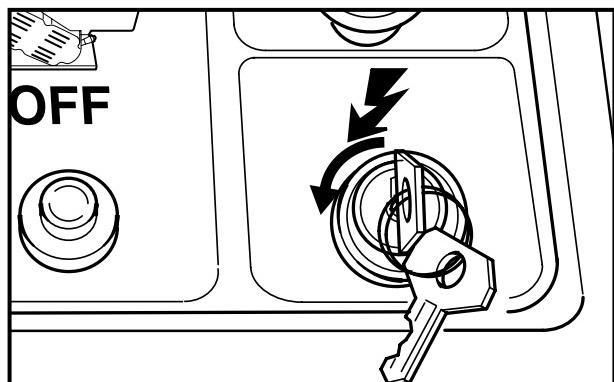
A safety device is located inside the operator seat: the drive function - either forward or reverse - is disabled as soon as the operator will stand up or leave the seat.



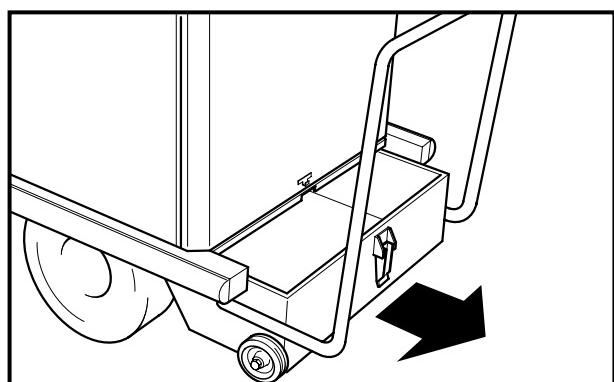
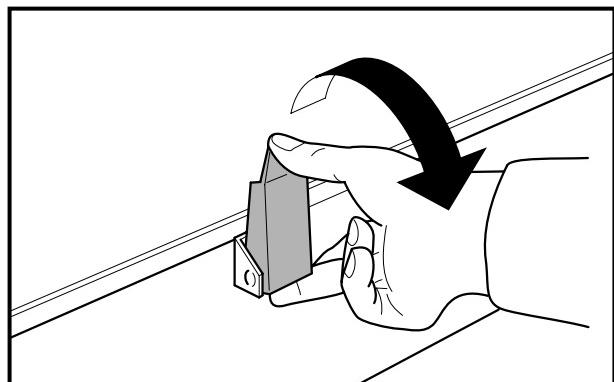
At the end of the job turn off the selected working program (P1 or P2) and switch the eco versioneco version Off pressing the button shown in the figure.



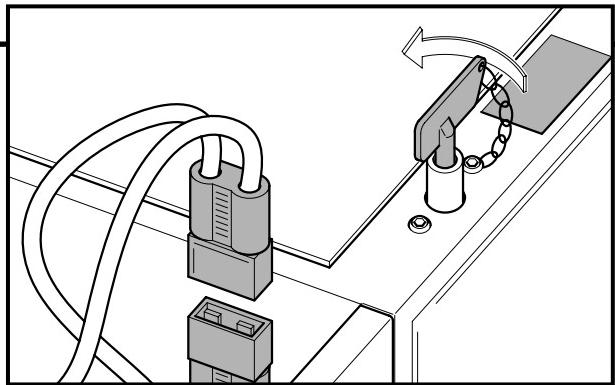
Before leaving the machine make sure that the side brush/es be lifted, the parking brake engaged and the master key in the Off position (counter-clockwise).



At the end of the job or whenever it is necessary empty the rear dirt container.



In the event that the machine must be pushed in Off condition or without batteries turn the proper key counter-clockwise (see the figure), in order to disengage the electrical drive motor and disable the self-breaking function. Turn and eventually remove the red key that can be seen after lifting the lid of the engine/battery compartment.



FURTHER PERFORMANCES OF THE MACHINE WITH ECO VERSION

The machine equipped with the eco version is able to work with full performance even if the eco version is turned Off; this could occur just because the machine run out of the fuel or when it is necessary to work in a closed environment.

In this case the available working time will depend on the capacity (amper.hours) of the batteries installed on the machine; on the intensity of the selected working program; on the charge status of the batteries.

On this machine, in order to guarantee the reliability of the batteries, two safety features are envisaged:

1- protection against the deep discharge of the battery: when the battery voltage drops down to about 20 Volt the automatic stop of all function will occur - except the traction function. When in this condition, it is necessary to proceed with the recharge of the battery or to start the eco version.

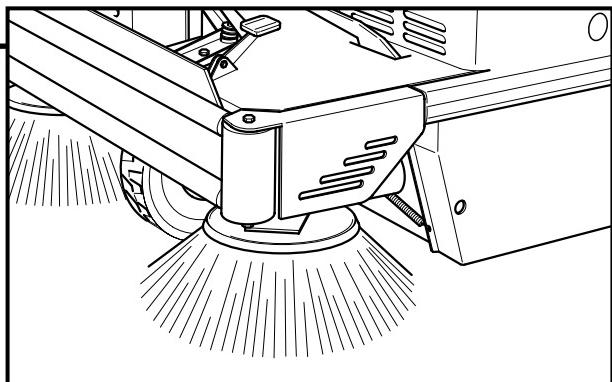
2- Protection against the excessive recharge. If the battery voltage will reach the value of about 29 Volt the automatic stop of the eco version will occur.; in any case the machine will still be able to operate only with batteries. The eco version can be restarted when the battery voltage will be low enough (at about 24 Volt).

SIDE BRUSHES ADJUSTMENT AND REPLACEMENT

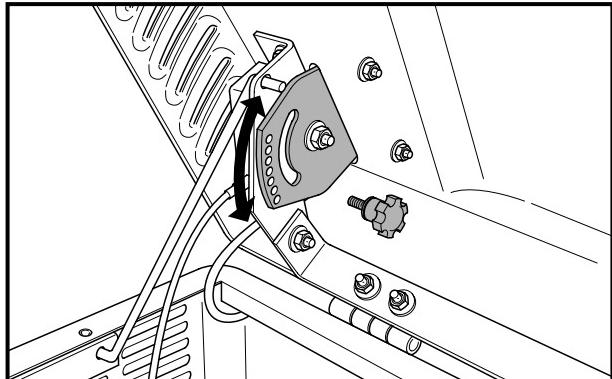
56041475

Warning: the following operations must be done with the machine in Off condition and master key out, on a flat floor.

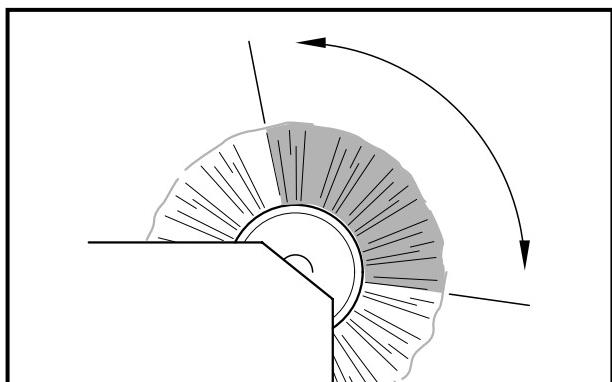
When the side brush is worn its height must be adjusted.



Loosen the knob. Turn the adjusting disk and tighten the knob.

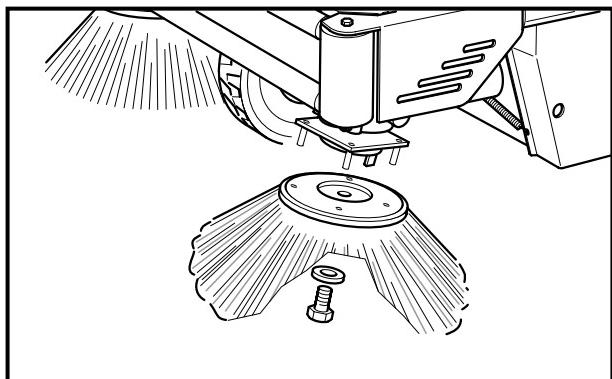


To check the adjustment of the brush start it and verify that the contact with the floor is as shown in the figure. If necessary repeat the adjustment sequence.



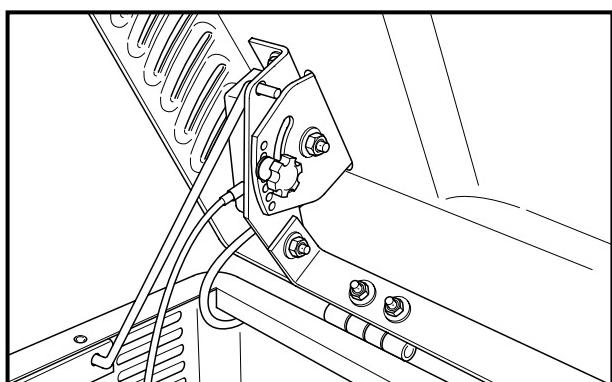
When the brush is very worn the replacement is necessary; remove the screw used to fix the brush to the shaft of the motor with gear box (pay attention not to lose the screw and the reference key).

Remove the metal hub from the worn brush and mount it on the new one.



Put some grease on the shaft.
Use the metal key, the screw and the washer to fix the new brush to the shaft.

Note: when the brush is replaced set the adjusting devices to their original position (corresponding to brush new, with no wear).



Warning: the following operations must be done with the machine in Off condition and master key out.

This machine is equipped with an automatic control of the main brush pressure; this also means that the position of the main brush is automatically adjusted (no need of manual adjustment).

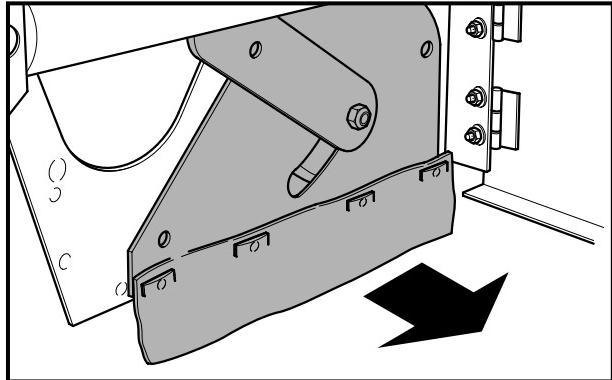
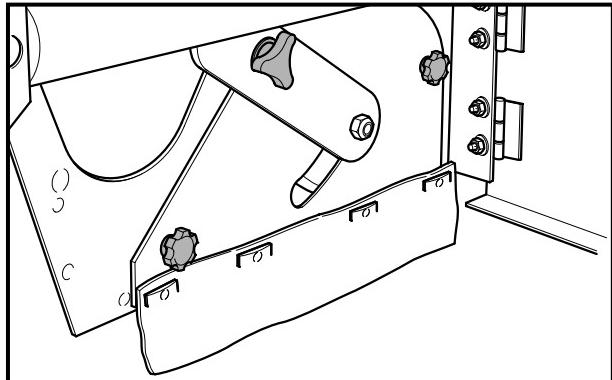
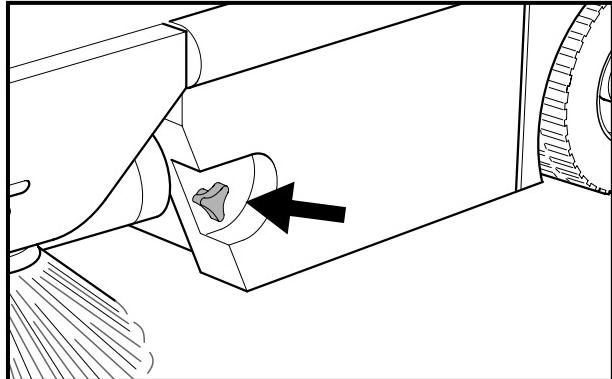
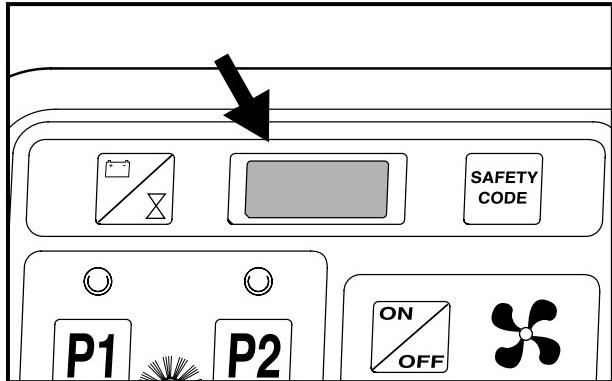
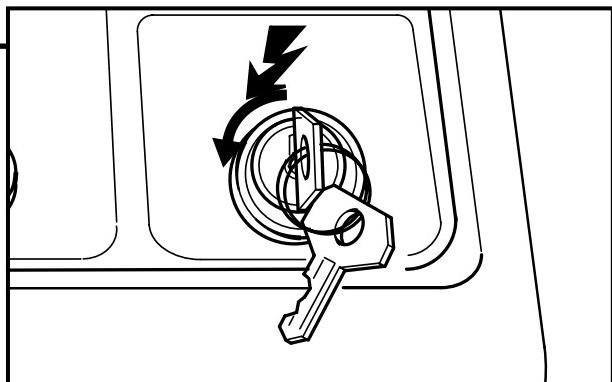
The complete wear of the main brush - and then the need to replace it - is notified with code 800 on the display.

Please meet the following procedure for the main brush replacement.

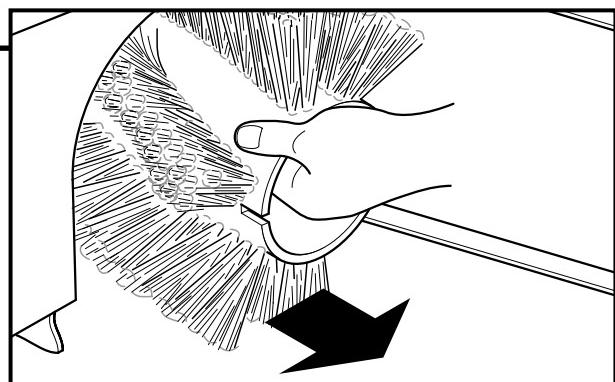
Open the side door on the left side of the machine, unscrewing the knob shown in the figure.

Remove the three knobs used to fix the lid of the main brush compartment.

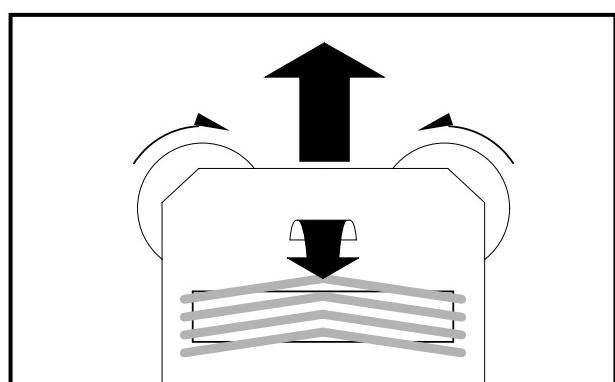
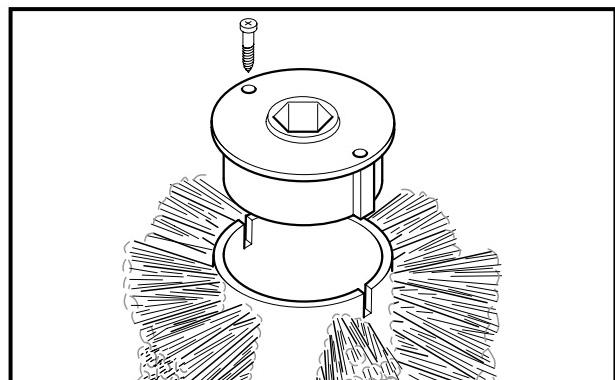
Remove the lid of the main brush compartment.



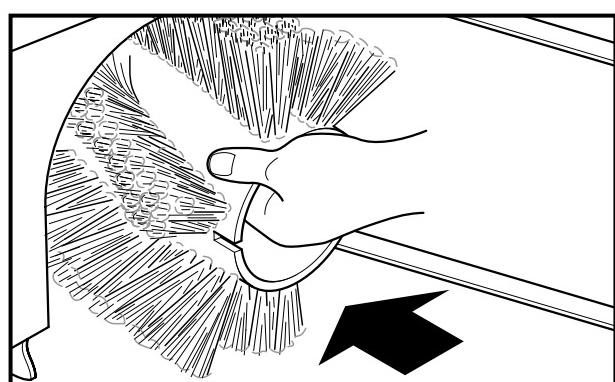
Remove the worn brush.



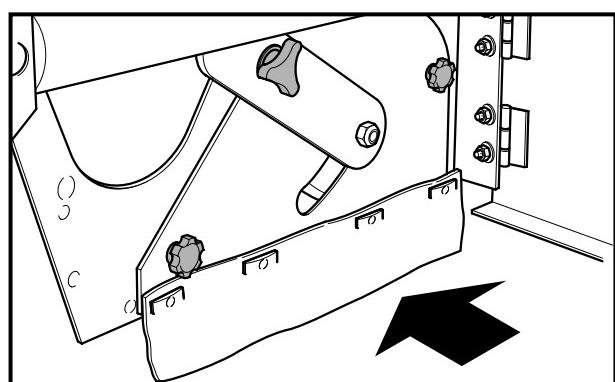
Remove the plastic adapter from the worn brush, using a screw driver.
Fix the plastic adapter to the new brush: pay attention to the correct angle of the brush bristles (look at the next figure).



Fit the new brush in its compartment, paying attention to the engagement of the plastic adapter with the hub on the opposite side of the compartment.

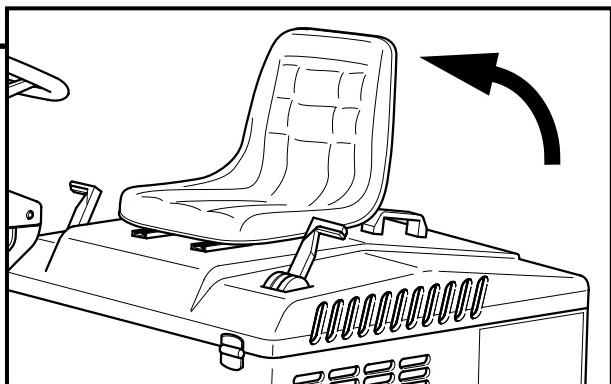


Fit the lid of the main brush compartment using the three knobs previously removed.

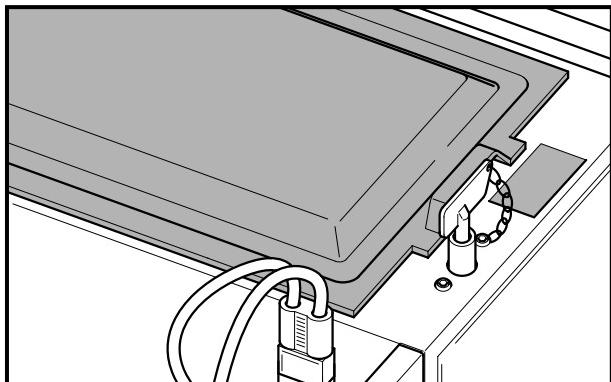


The panel filter requires a regular cleaning.

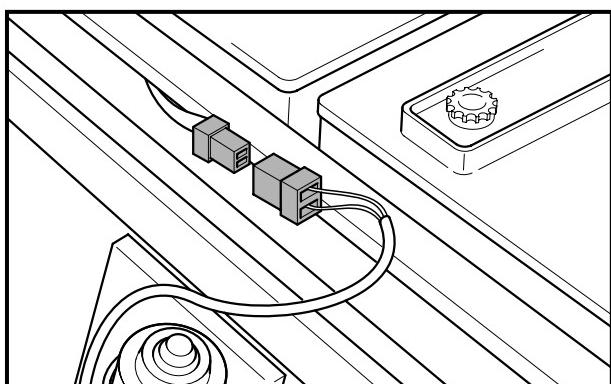
Lift the lid of the battery/engine compartment.



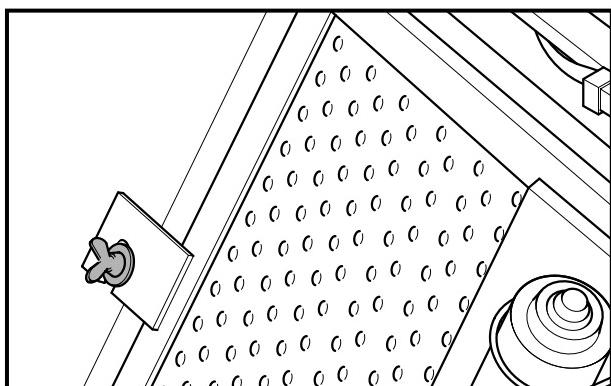
Remove the lid of the filter compartment.



Disconnect the electric cable of the filter-shaker motor (the machine must first be switched off and the key out).

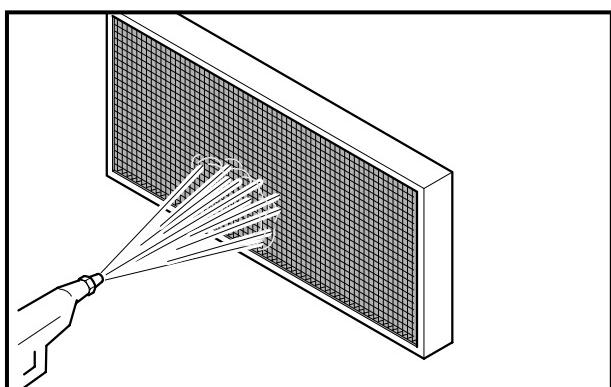


Loosen the two screws with butterfly head on the two sides of the metal frame fixing the panel filter; it is not necessary to remove the screws completely.



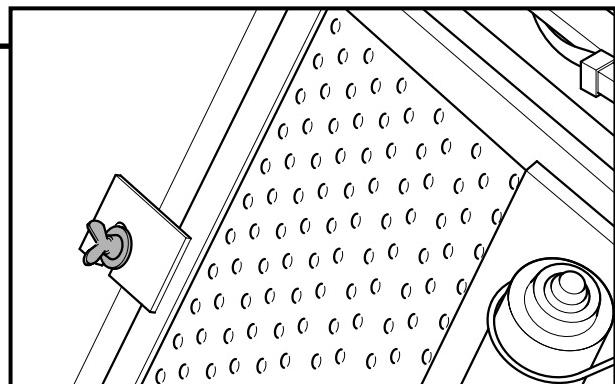
Remove the metal frame and take the panel filter out.

Clean the filter shaking it and blowing with compressed air - pressure not higher than 6 bar- from the side where the metal protection net is mounted, to prevent damage to the paper.



After cleaning fit the filter and the relevant fixing frame.

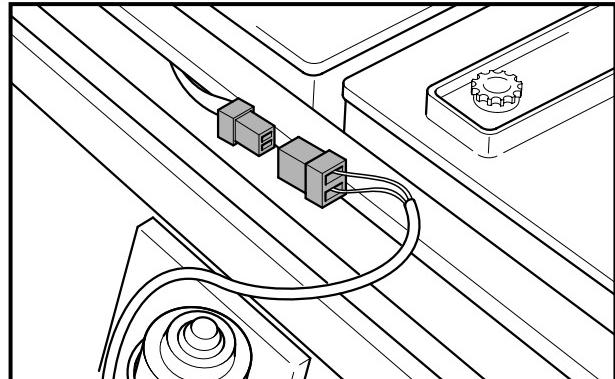
Tighten the two screws with butterfly head and reconnect the filter shaker electric cable.



If the filter is damaged or can not be properly cleaned replace it with a new one.

Ask to your supplier for the new spare part.

Polyester panel filters are also available.



BATTERIES: CONTROL AND RECHARGE

Make a frequent check of the electrolyte level inside every battery cell. The battery compartment is under the operator seat; lift the lid and open the caps of all the battery cells: when necessary fill up the cells with distilled water.

Warning: On the version with eco version the battery level check must be done every week.

The proper electrolyte level is specified in the Manual for use and maintenance of the battery.

After filling close all the cell caps and clean the top of the battery from any acid remains.

Warning: the battery acid is corrosive; if it comes in contact with the skin or eyes rinse thoroughly with water and consult a physician.

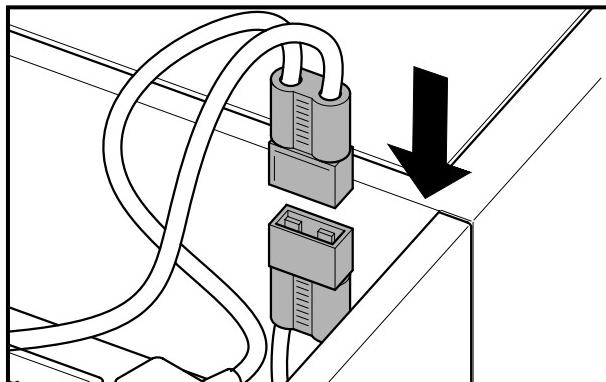
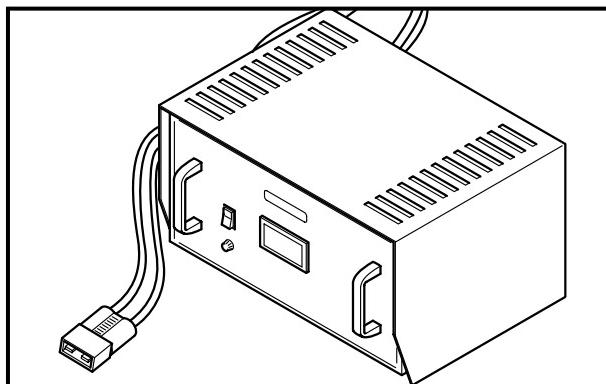
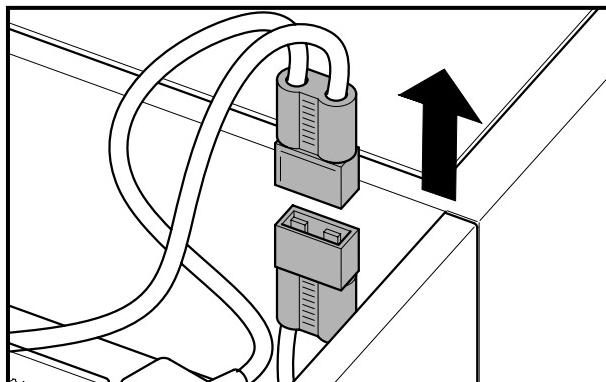
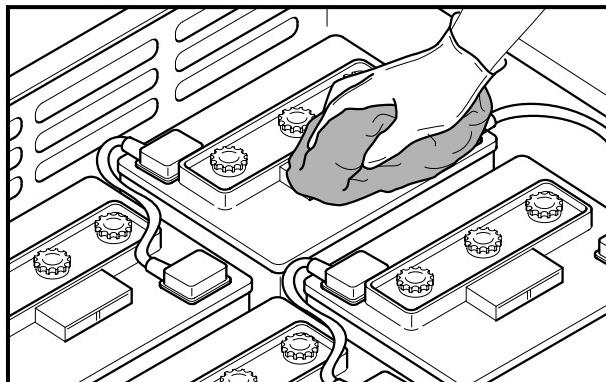
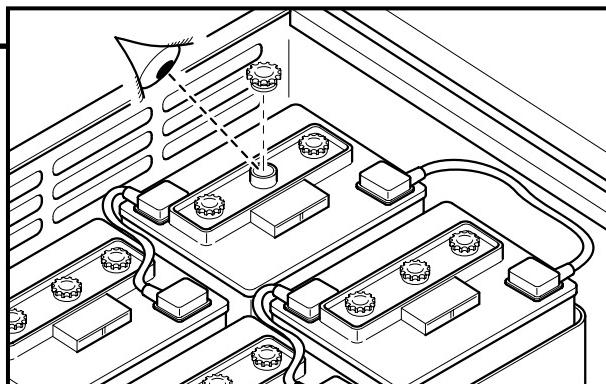
When necessary proceed with a recharge of the battery according to the following instructions and taking also into account what is specified in the Battery User Manual:

- switch the machine Off and remove the master key.

Warning: before starting the recharge the battery connector must be disconnected from the machine.

- the recharge must be done in a well ventilated area
- open all the cell caps
- connect the battery connector to the battery charger connector
- connect the battery charger cable to the mains (please check that the voltage and frequency of the mains correspond to the data of the charger)

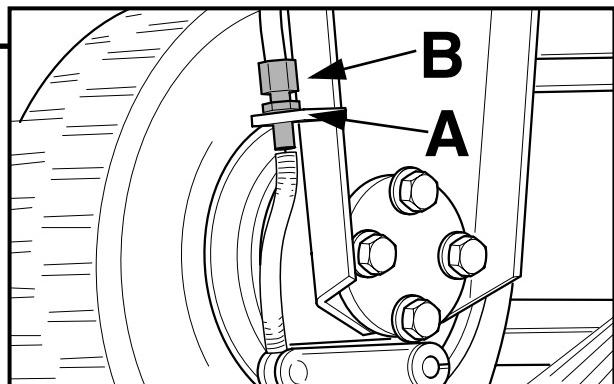
At the end of the recharge disconnect the battery from the charger and fit the battery connector to the machine. Close all the cell caps and clean the top of the battery from any acid remains.



BRAKES ADJUSTMENT

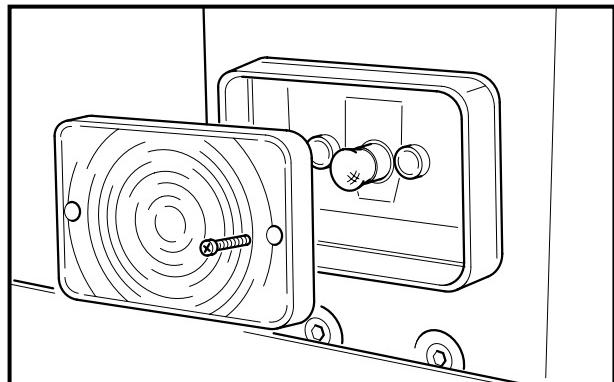
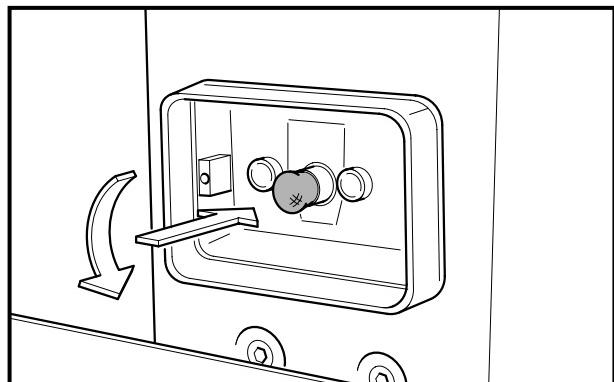
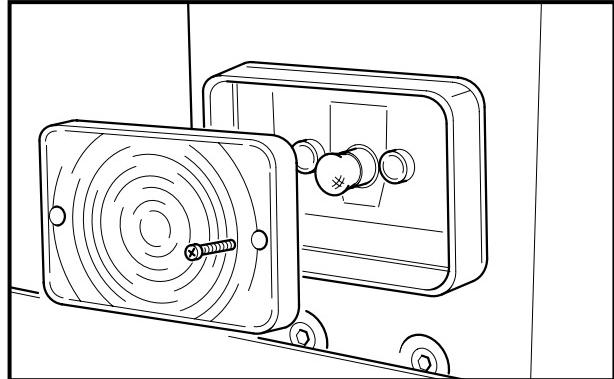
When the pedal brake and/or the parking brake reach a low efficiency operation some adjustments can be done on the front wheel (models SR 1100, SR 5110):

- loosen the locking nut A
- turn adjuster B
- tighten locking nut A.

**FRONT LAMP REPLACEMENT**

In order to replace the front lamp:

- remove the transparent cover
- push the lamp and turn it counter-clockwise to remove it
- replace the lamp paying attention to the volt and watt ratings
- fit the transparent cover.



MAINTENACE OF THE ECO VERSION

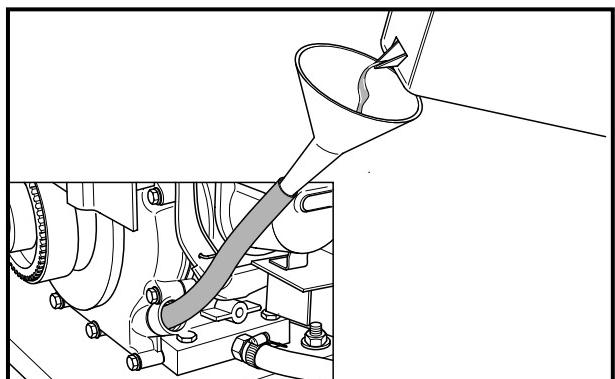
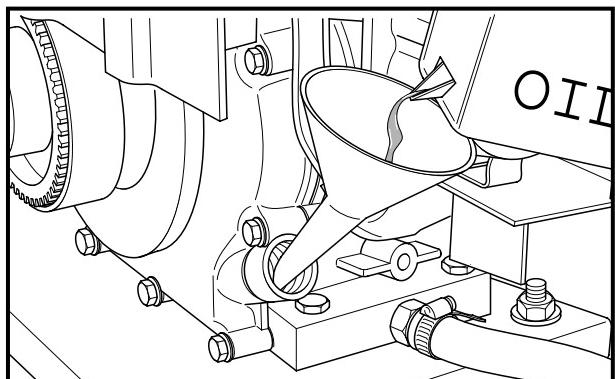
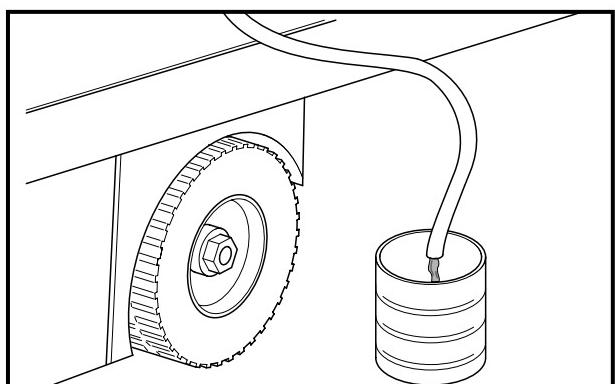
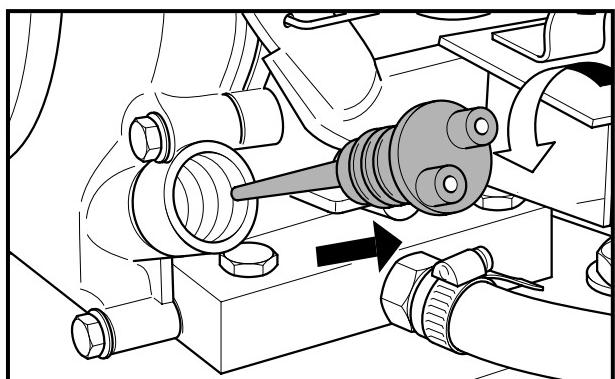
First: read thoroughly the Use and Maintenance Manual of the engine. Here below some recommendations are pointed out.

Check the engine oil level two times per week; for possible fill up read the oil type specified on the engine Manual

Warning: the engine oil must be replaced the first time after 50 working hours or, in any case, not later than one month since the receipt of the machine. The succeeding times it must be replaced every 100 hours or not later than 8 months since the last replacement.

It is an automatic safety device which does not permit to start or stops the motor if the oil quantity is not enough. **FOR THIS SAFETY DEVICE THERE IS NO CONTROL LED.**

The procedure for the replacement of the engine oil is specified here below.



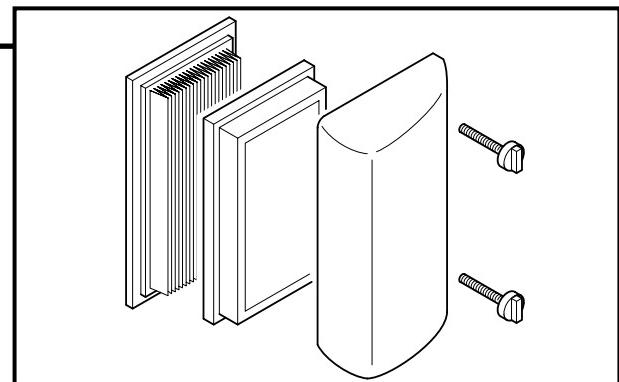
Make a periodic check of the engine air filter.

If necessary wash the engine air filter with water and soap or any other detergent for domestic use.

Squeeze it and dry it well.

Wet it with engine oil and squeeze it again to remove the exceeding oil.

Fit the engine air filter in its compartment and the relevant cover.



Warning: the following interventions must be done with machine in Off condition and master key out. All the periodic maintenance operations must be performed by skilled personnel or by an authorized service centre.

Note: the battery life will depend on a good periodic maintenance (check of the level of the electrolyte and of battery voltage). Besides it must be taken into account that an unused battery is submitted to a self-discharge phenomenon. In the event that the machine is not used for a long time (e.g. 3 or 4 weeks) it is necessary TO RECHARGE THE BATTERY; infact the battery voltage MUST NEVER drop down below 20 Volt.

CONTROL	UPON DELIVERY	EVERY 30 HOURS	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 400 HOURS
Battery liquid level and voltage check	•	• OR EVERY TWO WEEKS			
Check the carbon brushes of all electrical motors and replace them if worn					•
Belt tension	•			•	
Brake adjustment	•			•	
Filter shaker			•		
Nut and screw tightness				•	
Wear of main brush and side brushes			•		
Panel filter cleaning			•		
Sealing of gaskets of filter compartment and of flaps	•		•		
GREASE: chain of the steering crown				•	

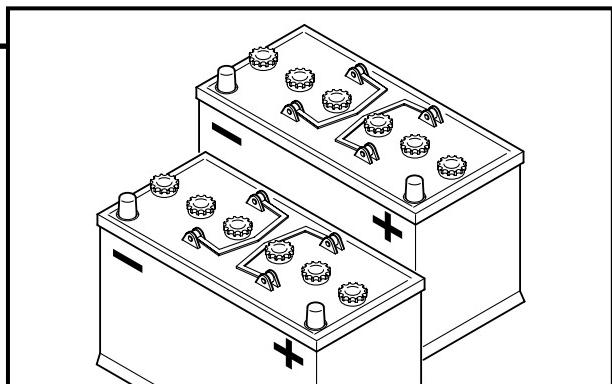
Warning: the following interventions must be done with machine in Off condition and master key out. All the periodic maintenance operations must be performed by skilled personnel or by an authorized service centre.

Every maintenance intervention on the eco version must be performed in agreement with the engine User Manual.*

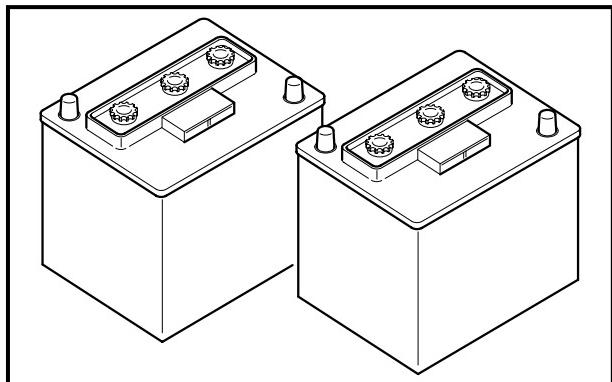
Note: the battery life will depend on a good periodic maintenance (check of the level of the electrolyte and of battery voltage). Besides it must be taken into account that an unused battery is submitted to a self-discharge phenomenon. In the event that the machine is not used for a long time (e.g. 3 or 4 weeks) it is necessary TO RECHARGE THE BATTERY; infact the battery voltage MUST NEVER drop down below 20 Volt.

CONTROL	UPON DELIVERY	TWO TIMES PER WEEK	ONE TIME PER WEEK	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 400 HOURS
Battery liquid level and voltage check	•		•			
Engine air filter cleaning*				•		
Panel filter cleaning				•		
Engine oil level check*	1 st TIME	•				
Engine oil replacement*				• 1 st TIME	•	
Check the carbon brushes of all electrical motors and replace them if worn						•
Belt tension	•				•	
Brake adjustment	•				•	
Filter shaker				•		
Nut and screw tightness					•	
Wear of main brush and side brushes				•		
Sealing of gaskets of filter compartment and of flaps	•			•		
GREASE: chain of the steering crown					•	

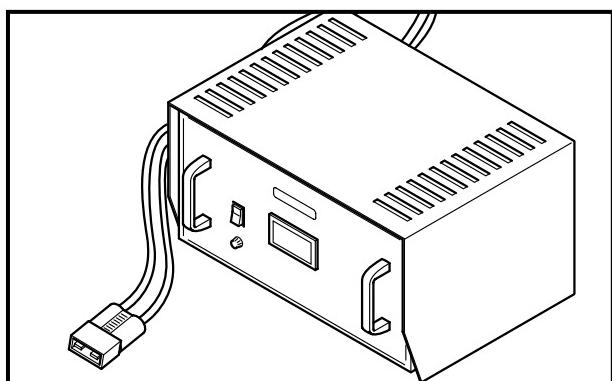
High capacity batteries for machine with eco version



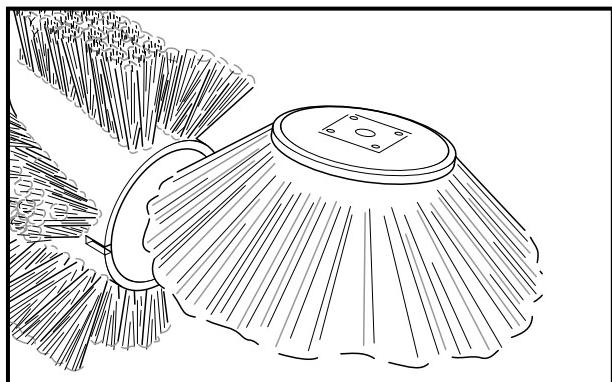
High capacity batteries for machine without eco version



Battery charger

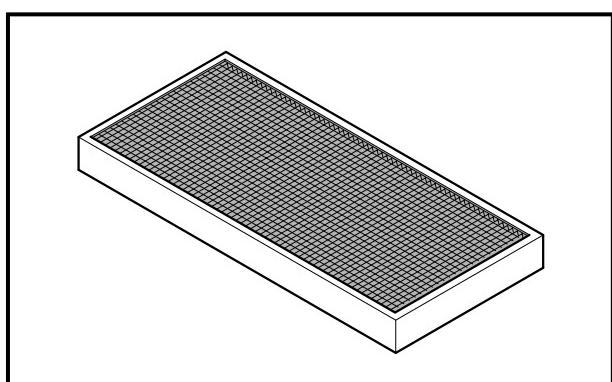


Different types of main bushes and side brushes

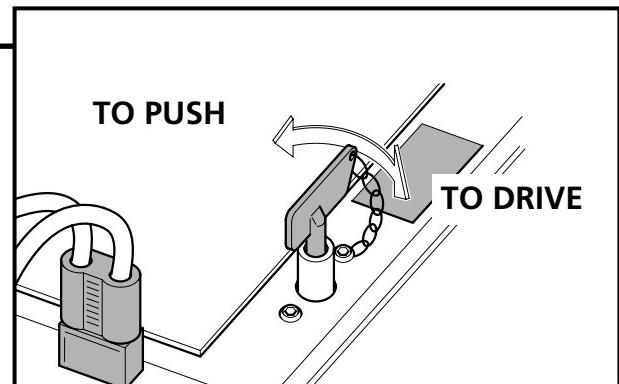


Polyester panel filter (it can be washed)

In order to have more detailed information for all the optional items get in touch with your supplier of the machine.



The machine is equipped with many safety devices and functions which have been described in the USE paragraphs (both for petrol and electrical versions). For instance the automatic stop of all functions to avoid the deep discharge of the battery has been mentioned; and also the availability of a special red key for the disengagement of the self-breaking function has been notified: this is to be operated when the machine must be pushed in Off condition.



SEE SAFETY CODE 333

Besides the intervention of other safety functions is notified by means of dedicated safety codes appearing on the display. These safety codes are described in the following

SAFETY CODE	MACHINE BEHAVIOUR	DESCRIPTION OF THE MALFUNCTION	POSSIBLE INTERVENTION
301	Stop of all functions and traction	Overttemperature of the drive motor	<ul style="list-style-type: none"> -If the machine run on a long ramp it could be normal: let the machine cooling 20 minutes -Check the efficiency of the front and rear brakes -Check the rotation of the rear drive wheels
302	The machine does not start or, in the event it was working, will stop	Possible problem with traction control electronic circuit	<ul style="list-style-type: none"> -Check carbon brushes of traction motor -Check connection cables of traction motor -If the above is OK replace the power electronic board
305	The machine functions will stop	High temperature on the electronic control circuits (95 °C)	<ul style="list-style-type: none"> -If the ambient temperature is high let the machine cool down 20 minutes -If the problem will remain call the technical service to check the electrical motors
306	Stop of all functions and traction	High temperature on the electronic control circuits (105 °C)	-Make the same checks as per code 305
307	The machine does not start	Wrong start sequence	-Release the accelerator pedal before turning the key On
308	The machine does not start	Damage of the cable of potentiometer for traction control	<ul style="list-style-type: none"> -Check the cable connections of the potentiometer for traction control -Check the potentiometer for traction control
333	The machine does not start	<ul style="list-style-type: none"> -Off status of the red key for the disabling of the self braking function (see the picture on the top page) -Possible trouble of motor kables (short circuit or open circuit) 	<ul style="list-style-type: none"> -Insert the red key and turn it clockwise -Check the motor cables
800	Display flashing	Main brush worn	-Replace the main brush

Nilfisk-Advance Italia S.p.A
Località Novella Terza
26862 Guardamiglio (Lodi) Italia
Tel. +39 0377 451124 Fax +39 0377 51443